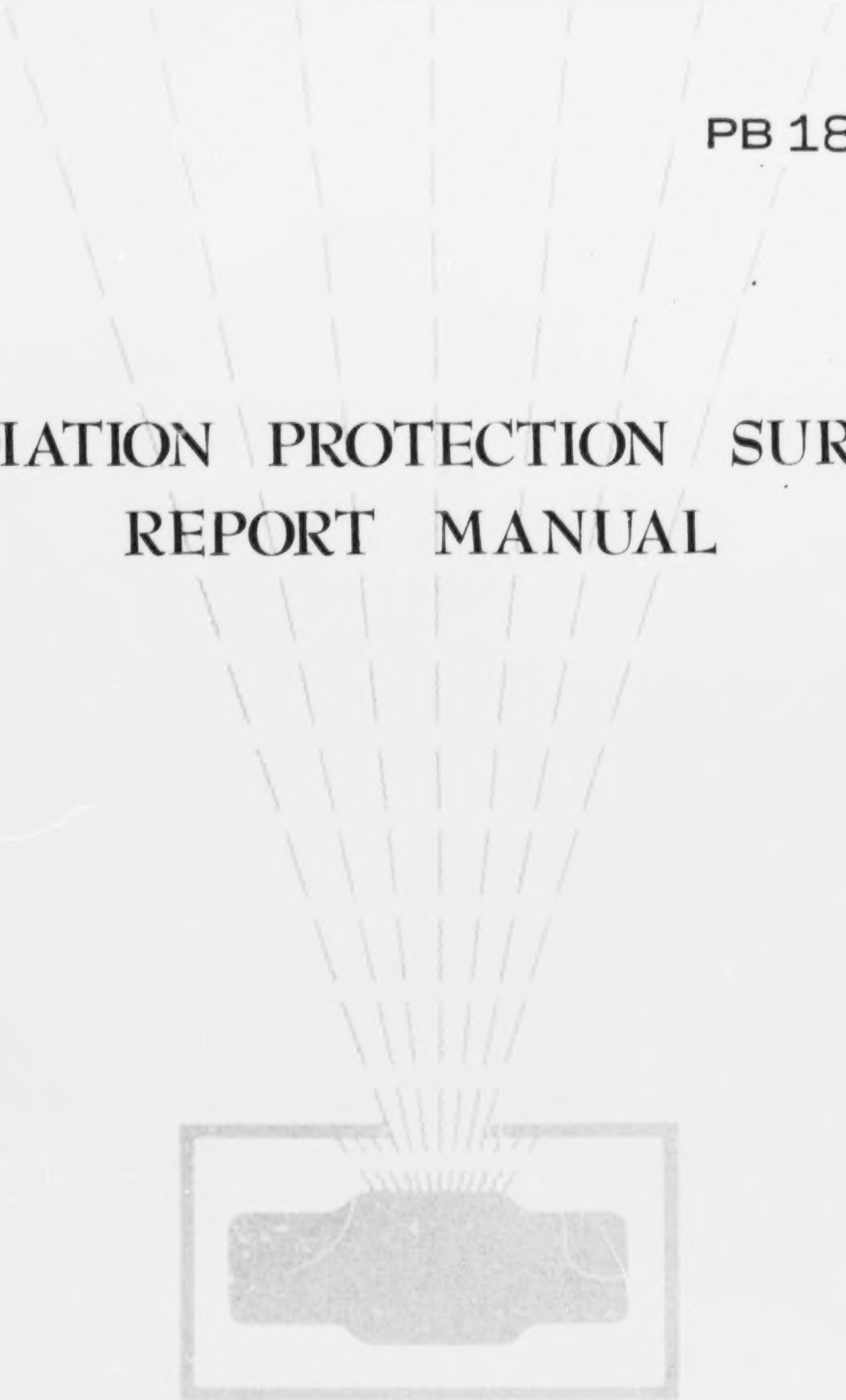
PB 183018

RADIATION PROTECTION SURVEY REPORT MANUAL



U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Public Health Service

Reproduced by the
CLEARINGHOUSE
for Federal Scientific & Technical
Information Springfield Va. 22151

90

RADIATION PROTECTION SURVEY
REPORT MANUAL

prepared by

Bureau of Disease Prevention and Environmental Control
National Center for Radiological Health
Public Health Service

Public Health Service Publication No. 1582

The use in this manual of trade names of commercially available products does not constitute an endorsement of the product by the Public Health Service and does not imply that there are no other suitable products available.

PREFACE

Ionizing radiation has become one of the Nation's significant health problems. In assessing and controlling this problem, all sources of radiation must be considered since the effects of exposure to ionizing radiation are cumulative. X-ray sources of radiation are extremely numerous and widespread. Protecting the public can, therefore, be accomplished only by a nationwide effort planned and guided by public health authorities with due consideration given to the role and responsibilities of individual and organized groups of users.

The radiation generated by the more than 100,000 medical diagnostic and therapeutic X-ray units in the United States, while obviously yielding great benefits to man, also consitutes a major source of population exposure from man-made radiation. Numerous surveys have demonstrated that recommended requirements for equipment, structural shielding and/or operating procedures are not met by a significant percentage of X-ray installations currently in use.

Significant reductions in radiation exposure without diminution of clinical benefits, can be achieved through a program which insures that all diagnostic and therapeutic X-ray and teletherapy installations meet established recommended standards.

To aid health agencies in achieving the public health goal of reducing useless radiation exposure, this publication was developed, ~~by the~~ National Center for Radiological Health, Public Health Service.

This manual will assist qualified personnel in completing the survey forms developed and distributed by the Public Health Service. These forms have been designed to provide meaningful information which can be easily coded and tabulated through automatic data processing operations. ~~The items~~ on the forms are based on current State regulations, Nationally recommended standards, and relevant particulars generally agreed upon by individuals in the field of radiological health. The resultant information aids appropriate health agencies in evaluating X-ray and teletherapy installations and provides the basis for correcting deficiencies and for future program needs.

The survey procedures referred to in this manual should be carried out by, or under the supervision of, a qualified expert.

TABLE OF CONTENTS

Preface...v

Table of Contents................................vii

Facility Form....................................1

Radiographic Form................................11

Fluoroscopic Form................................19

Therapeutic Form.................................27

Coding and Punching Instructions.................35

Sample Forms.....................................75

Glossary...85

Abstract Cards...................................91

BLANK PAGE

FACILITY FORM

The Facility Form supplies information relating to the identification and general operation of the facility being surveyed. If a large institution is comprised of several facilities, a separate Facility Form should be completed for each. A completed Facility Form can be found on page 75. Items 1, 2, 3, 4, 5 and 7 can be completed prior to the actual visit. These items are identical for the Facility, Radiographic, Fluoroscopic and Therapeutic Forms. (Whenever the number of digits required for coding is less than the number of code blocks supplied, use the right hand blocks first and insert 0 in the unused blocks to the left. Never enter more than one digit in a single block.)

Items 1 and 2

These items are self-explanatory.

1. NAME OF FACILITY	2. TELEPHONE
MiLLER MEMORIAL HOSPiTAL	824-1020

Item 3, Number Assigned by Agency

Code blocks (1-6) are used to indicate a predesignated number of up to six digits assigned by the agency conducting the survey to identify a particular facility. This number will appear on all forms (Facility, Radiographic, Fluoroscopic and Therapeutic) used in surveying this facility.

3. NUMBER ASSIGNED BY AGENCY	0	0	1	3	7	7
	1	2	3	4	5	6

Item 4

This item is self-explanatory.

4. LOCATION (Street, Building, Room Number)
1016 WOODALE DRiVE

Item 5, Date

Code blocks (7-8) are used to indicate the month, (9-10) the day and (11-12) the year in which the survey was conducted. A survey conducted on September 9, 1966 should be coded as follows:

5. DATE (Mo., Day, Yr.)	0	9	0	9	6	6
	7	8	9	10	11	12

Item 6, Card I.D.

Code block (13) is used to indicate the type of survey form being completed and for the Facility Form is always 1.

Code blocks (14-15) will always be coded 01 on the Facility Form for data processing purposes.

Code blocks (16-17) are used to indicate the total number of forms (Facility, Radiographic, Fluoroscopic, and Therapeutic) completed in the survey of a facility. Do not include dental forms.

Example: Memorial Hospital houses one, 2-tube combination machine; one, 1-tube combination machine; one portable machine; one X-ray therapy machine and one cobalt 60 teletherapy unit. We arrive at a total of 8 forms required for the facility as follows:

2-tube combination machine requiring completion of 2 forms.

1-tube combination machine requiring completion of 2 forms.

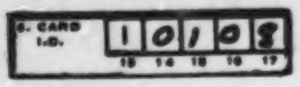
Portable radiographic machine requiring completion of 1 form.

1 X-ray therapy machine requiring completion of 1 form.

1 cobalt therapy unit requiring completion of 1 form.

1 facility only.

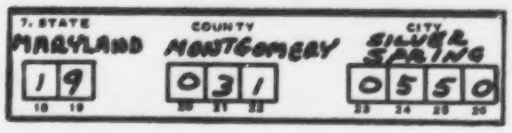
Item 6 would then be coded as follows:



6. CARD I.D.	1	0	1	0	8
	13	14	15	16	17

Item 7, State, County and City

Code blocks (18-19) are used to indicate the State; blocks (20-22) the county; and blocks (23-26) the city in which the facility is located. The codes are taken from the I.B.M. reference manual entitled, "Numerical Codes for States, Counties, and Cities of the United States". Copies are available upon request and may be obtained from Public Health Service Regional Offices through the Radiological Health Program Director. (Note: All cities not listed in the I.B.M. reference manual should be assigned a nonconflicting code by the State.) See example on following page.

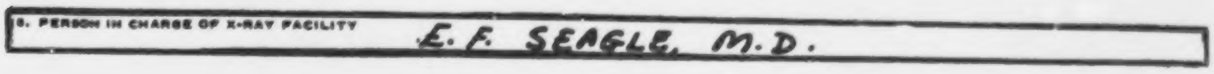

7. STATE MARYLAND 1 9 (18 19)

COUNTY MONTGOMERY 0 3 1 (20 21 22)

CITY SILVER SPRING 0 5 5 0 (23 24 25 26)

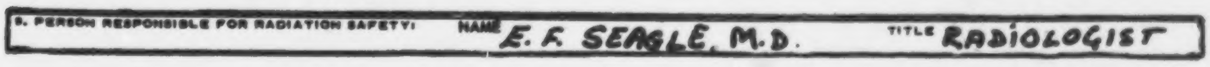
Item 8, Person in Charge of X-ray Facility

Insert the name of the individual responsible for the operation of the facility.


8. PERSON IN CHARGE OF X-RAY FACILITY E. F. SEAGLE, M.D.

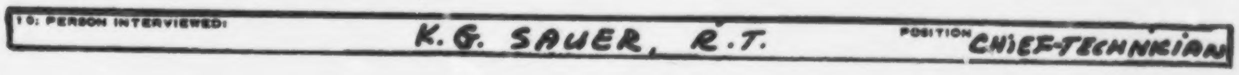
Item 9, Person Responsible for Radiation Safety

Insert the name and title of the individual responsible for the safe operation of the equipment.


9. PERSON RESPONSIBLE FOR RADIATION SAFETY: NAME E. F. SEAGLE, M.D. TITLE RADIOLOGIST

Item 10, Person Interviewed

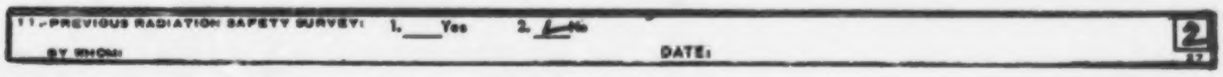
Insert the name and title of the most responsible person providing information to the surveyor.


10. PERSON INTERVIEWED: K.G. SAUER, R.T. POSITION CHIEF-TECHNICIAN

Item 11, Previous Radiation Survey

Code block (27) is used to indicate if a previous survey has been performed. If the facility has had a previous survey, state by whom and the date conducted. When more than one survey has been completed, record the most recent.

Example: At Memorial Hospital no radiation safety survey has been previously conducted, so the number 2 is checked; and this number is placed in block (27).


11. PREVIOUS RADIATION SAFETY SURVEY: 1. ___ Yes 2. ✓ No 2 (27)

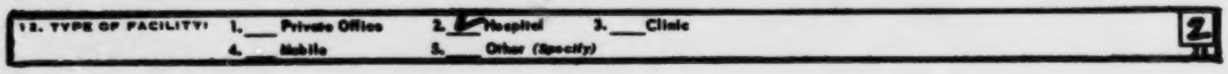
BY WHOM: DATE:

Item 12, Type of Facility

Code block (28) is used to indicate the type of facility surveyed. The facility classifications are as follows:

1. Private Office - Includes an individual practitioner, a partnership, group practice, etc.; but patients are not shared.
2. Hospital - A facility within an institution where there are inpatients. Under this is also included "Hospital Clinic" handling outpatient work.
3. Clinic - Includes two or more practitioners who share patients. Otherwise, these are only an aggregate of private office practitioners.
4. Mobile - Refers to facilities which are able to change locations, such as the mobile chest X-ray trucks.
5. Other - May include industry which employs a practitioner or has a medical X-ray facility.

Example: Our survey is carried out at Memorial Hospital; therefore, number 2 "Hospital" should be checked and the code number 2 inserted in code block (28).

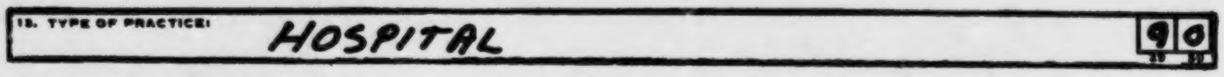


12. TYPE OF FACILITY: 1.___ Private Office 2.✓ Hospital 3.___ Clinic
4.___ Mobile 5.___ Other (Specify)
2
28

Item 13, Type of Practice

Code blocks (29-30) are used to indicate the type of specialty practice or specialties for which the X-ray facility is used. The designation of multiple specialties indicates that a physician practices in more than one field of medicine. This same designation (multiple specialties) holds for a group of physicians who share a patient in a clinic situation. The various types of practices and their appropriate codes are listed in the Facility Coding and Punching Instructions in the appendix on page 36.

Example: The previous example of Memorial Hospital is used, and the choice of code is 90.



13. TYPE OF PRACTICE: HOSPITAL
9 0
29 30

Item 14, Personnel

A. Occupationally Exposed - Code blocks (31-32) are used to indicate the number of non-patients who are working in a radiation controlled area. This may include nonmedical personnel such as secretaries, laboratory aides, students, etc., in the area.

B. Number of Operators - Code blocks (33-34) are used to indicate the number of persons who actually activate the equipment.

C. Number Monitored - Code blocks (35-36) are used to indicate the number of persons in the facility who use personnel monitoring devices (i.e. film badges, dosimeters, etc.)

D. Monitoring System Employed - Code block (37) is used to indicate whether a monitoring system is currently in use at the facility or whether a system has ever been employed in the past.

E. Monitoring System Adequate - Code block (38) is used to indicate whether the system employed encompasses all persons occupationally exposed. N/A may be checked if exposures are such that a monitoring system is not required.

F. Monitoring Records Satisfactory - Code block (39) is used to indicate whether complete, up-to-date records of exposure for each occupationally exposed employee are maintained by the facility for the recommended length of time. If "E" has been coded N/A, "F" should be coded N/A.

G. Levels/Month - Observation of the monitoring records at the facility allows the surveyor to determine the maximum mR reading recorded for the most recent month reported.

H. Number Over 300 mR/Quarter - Code block (40) is used to indicate the number of personnel monitoring results which are over 300 mR for the most recent quarter reported.

Example: Memorial Hospital employs one radiologist, two technicians, one darkroom technician, two secretaries, and one aide in its Department of Radiology. All of these individuals work in the radiation controlled area. Therefore, the total entered in blocks (31-32) is 07. It is found that the radiologist, the two technicians, and occasionally the darkroom technician operate the X-ray equipment. Therefore, the total for blocks (33-34) is 04.

All persons employed in the radiation controlled area wear a personnel monitoring device; so blocks (35-36) are coded 07. The system currently employed by the hospital is adequate, and block (38) is coded 1. Up-to-date exposure records are maintained by the hospital, so the monitoring records can be considered satisfactory; and block (39) is coded 1. The maximum mR reading for the most recent month was 75 mR. No results were over 300 mR for the quarter, so block (40) is coded 0. Item 14 appears as follows:

14. PERSONNEL

A. TOTAL NUMBER OCCUPATIONALLY EXPOSED 7 — A 0 7

B. TOTAL NUMBER OF OPERATORS 0 4 — C. TOTAL NUMBER MONITORED — C 0 7

D. MONITORING SYSTEM EMPLOYED: 0. ___ Never or none 1. ✓ Currently 2. ___ Within past year 3. ___ Not within past year — D 1

E. MONITORING SYSTEM ADEQUATE: 1. ✓ Yes 2. ___ No 3. ___ N/A — E 1

F. MONITORING RECORDS SATISFACTORY: 1. ✓ Yes 2. ___ No 3. ___ N/A — F 1

G. LEVELS/MONTH: 75 Maximum MR. — H. NUMBER OVER 300 MR/QUARTER ___ — H 0

Item 15, "Workload"

A. Patients Radiographed - Code blocks (41-44) are used to indicate the average number of patients who are radiographed each week. This total should also include patients who are radiographed by the spot film device during fluoroscopy or by overhead radiographs taken following fluoroscopy. (Do not include veterinary workload.)

B. Patients Fluoroscoped - Code blocks (45-47) are used to indicate the average number of patients who are fluoroscoped per week.

C. Therapy Treatments - Code blocks (48-50) are used to indicate the average number of all X-ray and teletherapy treatments given per week.

Example: The number of patients radiographed at Memorial Hospital is about 125 during the week and about 25 on weekends for a total of 150 patients per week. Fluoroscopy is done twice a week with about 10 patients fluoroscoped each time for a total of 20 per week. Therapy treatments average about fifteen per week. For Memorial Hospital blocks (41-50) would be coded:

15. "WORKLOAD"

A. PATIENTS RADIOGRAPHED (Average per week) 150 — A 0 1 5 0

B. PATIENTS FLUOROSCOPED (Average per week) 20 — B 0 2 0

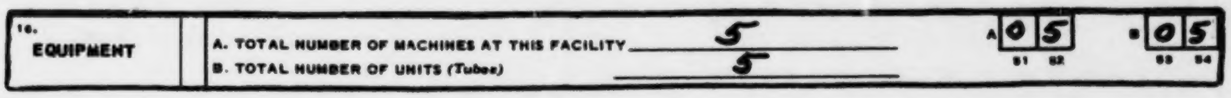
C. THERAPY TREATMENTS (Average per week) 15 — C 0 1 5

Item 16, Equipment

A. Number of Machines - An X-ray machine may be defined as a control console with the necessary appurtenances to energize one or more X-ray tubes. A teletherapy machine may be defined as a control console with the necessary appurtenances to expose one or more radioactive sources. The number includes radiographic (fixed and portable), fluoroscopic, combination, and X-ray therapy or teletherapy machines. A supervoltage machine may be defined as a control console with the necessary appurtenances to energize one or more sources which emit X-rays of an energy greater than 450 kVp. The number of dental machines are excluded from this total but may be noted on the form and not coded. The number of machines found are coded in code blocks (51-52).

B. Number of Units (Tubes) - An X-ray unit may be defined as an electronic tube and its necessary appurtenances used for the production of X-rays. The number of units is coded into code blocks (53-54). (Exclude dental units).

Example: The X-ray department at Memorial Hospital contains one, 2-tube combination machine; one, 1-tube combination; one X-ray therapy; one portable, and 1 cobalt teletherapy unit. Item 16 can now be completed as follows: [Please note: Nuclide source heads are not included in total unit (tube) count.]



16. EQUIPMENT

A. TOTAL NUMBER OF MACHINES AT THIS FACILITY 5

B. TOTAL NUMBER OF UNITS (Tubes) 5

A 0 5 (51 52)

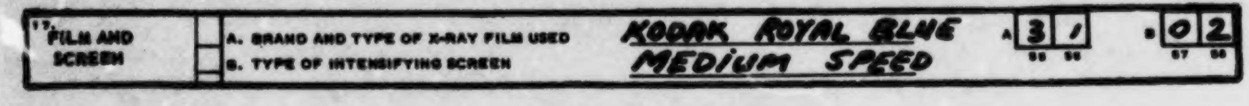
B 0 5 (53 54)

Item 17, Film and Screen

A. Brand and Type - Code blocks (55-56) are used to indicate the most commonly used brand and type of film. A list of film manufacturers and film speeds with their corresponding codes may be found in the Facility Coding and Punching Instructions in the appendix on page 39.

B. Intensifying Screen - Code blocks (57-58) are used to indicate the most commonly used type of intensifying screen. The type of screen is usually indicated on the back of the cassette or this information may be asked of the technician. Coding instructions for the common speeds of intensifying screens are located in the Facility Coding and Punching Instructions in the appendix on page 41.

Example: Memorial Hospital uses Kodak Royal Blue (Fast) film for most of its work. However, Gevaert high speed film is employed in the operating room procedures. Medium speed intensifying screens are employed. Item 17 should be coded as follows:



17. FILM AND SCREEN	A. BRAND AND TYPE OF X-RAY FILM USED	KODAK ROYAL BLUE	A 3 1	B 0 2
	B. TYPE OF INTENSIFYING SCREEN	MEDIUM SPEED		

Item 18, Darkroom Procedure

A. Darkroom Light Tight - Code block (59) is used to indicate proper light levels in the darkroom. The surveyor should personally inspect the darkroom conditions by scanning for for light leaks after a period of dark adaptation.

B. Type of Developer - Code blocks (60-61) are used to indicate the brand of developer used. A list of the common brands of developers and their codes can be found in the Facility Coding and Punching Instructions in the appendix on page 41.

C. Automatic Process - Code block (62) is used to indicate whether developing of the exposed films is done manually or done by a machine which automatically processes the film.

D. How Often Changed - Code blocks (63-64) are used to indicate the interval, in weeks, at which the developing tank is drained and refilled with a fresh solution of developer.

E. How Often Replenished - Code blocks (65-66) are used to indicate the interval, in days, at which a replenishing solution is added to the developing tanks to restore the strength and volume of the weakened developer.

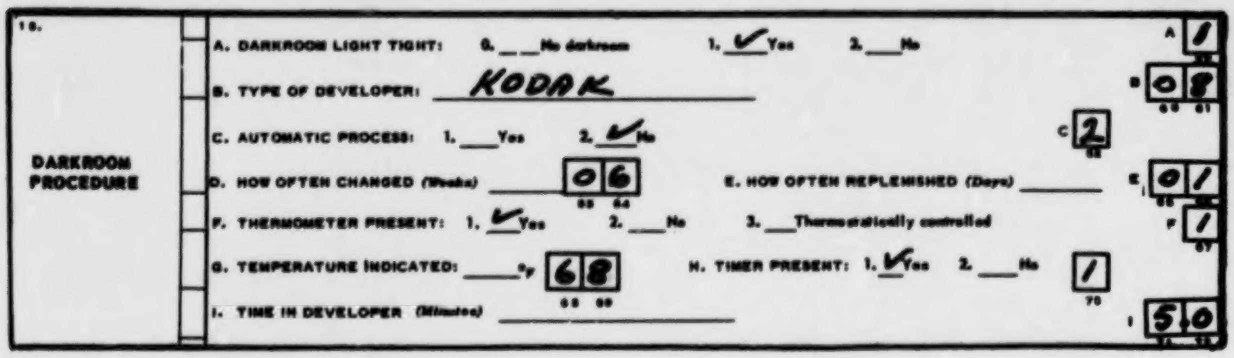
F. Thermometer Present - Code block (67) is used to indicate whether or not a thermometer, in good working order, is present in the darkroom. A thermostatically controlled temperature regulating device, such as is found on automatic developing machines, is acceptable.

G. Temperature Indicated - Code blocks (68-69) are used to indicate, in degrees Fahrenheit, the temperature of the developer.

H. Timer Present - Code block (70) is used to indicate whether a timer, either electrical or mechanical, is present in the darkroom.

I. **Time in Developer** - Code blocks (71-72) are used to indicate the time, in minutes, during which the exposed film usually remains in the developer. PLEASE NOTE: A DECIMAL POINT SHOULD BE INSERTED BETWEEN CODE BLOCKS (71) AND (72) SO THAT FRACTIONAL MINUTES MAY BE INDICATED.

Example: Memorial Hospital uses Kodak developer which is added to once a day and completely changed every six weeks. The developing time is five minutes at 68°F, a timer and thermometer are present, and the developing is done manually. (Note: In the case where an automatic processor is present, record the developing time as the complete cycle time). With this information, code blocks (59-72) should be coded:



18.
DARKROOM PROCEDURE

A. DARKROOM LIGHT TIGHT: 0. ___ No darkroom 1. [✓ Yes] 2. ___ No — A 1

B. TYPE OF DEVELOPER: KODAK — B 0 8 (60 61)

C. AUTOMATIC PROCESS: 1. ___ Yes 2. [✓ No] — C 2 (62)

D. HOW OFTEN CHANGED (Weeks) 0 6 (63 64) — E. HOW OFTEN REPLENISHED (Days) ___ — E 0 1 (65 66)

F. THERMOMETER PRESENT: 1. [✓ Yes] 2. ___ No 3. ___ Thermostatically controlled — F 1 (67)

G. TEMPERATURE INDICATED: ___ °F 6 8 (68 69) — H. TIMER PRESENT: 1. [✓ Yes] 2. ___ No — 1 (70)

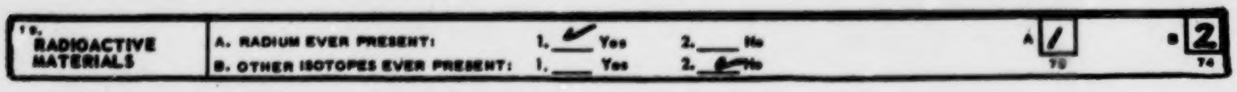
I. TIME IN DEVELOPER (Minutes) ___ — I 5.0

Item 19, Radioactive Materials

A. **Radium Ever Present** - Code block (73) is used to indicate whether radium or radon is ever present in the facility.

B. **Other Isotopes Ever Present** - Code block (74) is used to indicate whether any radioactive materials, other than radium or sources contained permanently in the head of a teletherapy unit, are ever to be found in the facility.

Example: Memorial Hospital does have radium, but no other isotopes are present. Item 19 would be coded:



19.
RADIOACTIVE MATERIALS

A. RADIUM EVER PRESENT: 1. [✓ Yes] 2. ___ No — A 1 (73)

B. OTHER ISOTOPES EVER PRESENT: 1. ___ Yes 2. [✓ No] — B 2 (74)

Item 20, Reason for Survey

Code block (75) is used to indicate the occasion for the survey. The reasons are as follow:

1. Initial - First routine survey.
2. Follow-up - Surveyors have returned to check for compliance, etc.
3. Re-survey - Second routine survey is being conducted.
4. Request - Requested by the hospital, doctor, administration, etc.
5. Complaint - Survey conducted as a result of a complaint by a neighbor, patient, etc.
6. Other - Specify any exception to the above reasons.

Example: The survey at Memorial Hospital was conducted as a part of an initial check of all X-ray facilities by the health agency. Therefore, the number 1 "Initial" would be checked and the code number 1 inserted in code block (75).

20 REASON FOR SURVEY	1. ✓ Initial	2. ______ Follow-up	3. ______ Re-survey	1
	4. ______ Request	5 ______ Complaint	6. ______ Other (Specify)	75

Item 21, Surveyors

The recorder should enter the name of each surveyor.

The reverse side of the Facility Form has space provided for additional information concerning the facility.

A. A chart is provided to allow the recording of necessary data for determining the shielding requirements of the facility.

B. Graph Paper - This is provided in order that the surveyor may sketch a floor plan of the facility as required or as an aid in describing certain situations.

C. Remarks - This space is provided if clarification of any information on the Facility Form is needed.

21 SURVEYORS	A. J. BRENNAN	B. R. McDOWELL

RADIOGRAPHIC FORM

The Radiographic Coding and Punching Instructions can be found on page 45 and a completed form is shown on page 77.

Items 1 Through 7

A separate Radiographic Form is completed for each radiographic tube and its associated machinery. Items 1-5 and item 7 are identical to the Facility Form. Item 6, code block (13) is used to indicate the type of form being completed; for the Radiographic Form the code is 2. Code blocks (14-15) are used to indicate the numerical sequence of the Radiographic Forms, thus the code would be 01 for the first, 02 for the second and so on. Code blocks (16-17) are used to indicate the total number of Radiographic Forms completed for the facility.

> Example: Memorial Hospital has three radiographic machines in use which will require three Radiographic Forms. This is the first form; therefore, item 6 appears as:

6. CARD I.D.	2	0	1	0	3
	13	14	15	16	17

Item 8, Equipment Identification

A. Number Assigned Machine - This item is not coded. A consecutive number system is recommended for identification of each radiographic unit within the facility and should correspond to blocks 14 and 15.

B. Control Panel Manufacturer - Code blocks (27-28) are used to indicate the code assigned to the control panel manufacturer. The manufacturer's name is usually found on the console. A coding scheme for X-ray equipment manufacturers can be found in the appendix on page 46.

C. Tube Head Manufacturer and Model - Code blocks (29-30) are used to indicate the code assigned to the tube head manufacturer. The manufacturer's name is usually found on the tube housing. Use the coding scheme for tube head manufacturers also located in the appendix on page 47.

D. Combination - Code block (31) is used to indicate whether the machine has capabilities for only radiography or both radiography and fluoroscopy.

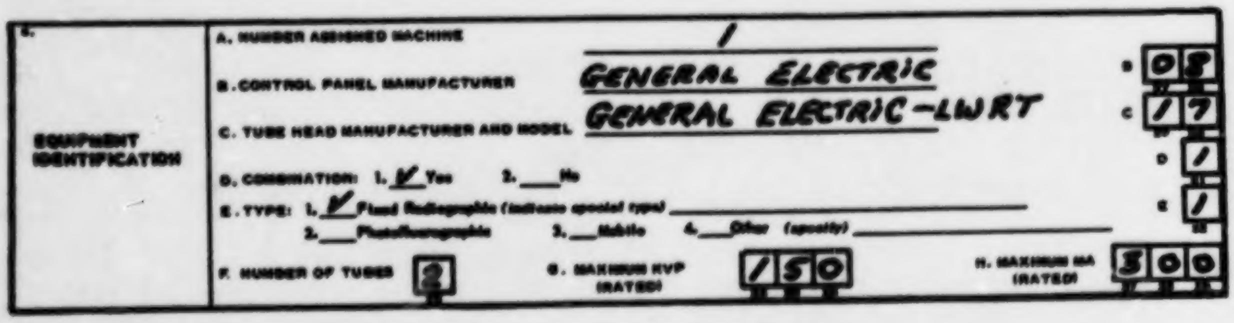
E. Type - Code block (32) is used to indicate the characteristic type of the machine. Code directly in the coding block.

F. Number of Tubes - Code block (33) is used to indicate the total number of X-ray tubes associated with any single machine. Code directly in the coding block.

G. Maximum kVp - Code blocks (34-36) are used to indicate the highest kVp setting indicated on the console.

H. Maximum mA - Code blocks (37-39) are used to indicate the highest mA setting indicated on the console.

Example: This is the first radiographic machine surveyed at the facility, and it is given the number 01. The control panel is manufactured by General Electric Corporation, and the tube head is labeled General Electric Model LWRT. It is a combination, radiographic and fluoroscopic, machine and is fixed. It has two X-ray tubes with the radiographic tube having a maximum kVp of 150 and a maximum mA of 300. Item 8 will be coded this way:



8. EQUIPMENT IDENTIFICATION

A. NUMBER ASSIGNED MACHINE 1

B. CONTROL PANEL MANUFACTURER GENERAL ELECTRIC — B 0 8

C. TUBE HEAD MANUFACTURER AND MODEL GENERAL ELECTRIC-LWRT — C 1 7

D. COMBINATION: 1. ✓ Yes 2. ___ No — D 1

E. TYPE: 1. ✓ Fixed Radiographic (indicate special type) ___ — E 1

2. ___ Photofluorographic 3. ___ Mobile 4. ___ Other (specify) ___

F. NUMBER OF TUBES 2

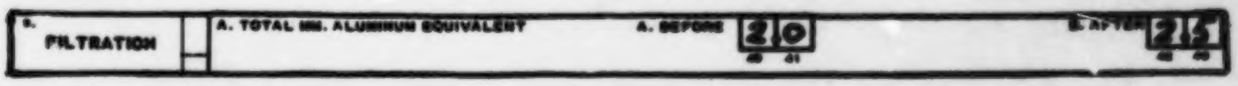
G. MAXIMUM KVP (RATED) 1 5 0

H. MAXIMUM MA (RATED) 3 0 0

Item 9, Filtration

Code blocks (40-41) are used to indicate the total filtration, expressed as millimeters of aluminum equivalent, as it exists at the start of the survey. Code blocks (42-43) are used to indicate the total filtration, expressed as millimeters of aluminum equivalent, as it exists at the end of the survey. Total filtration is defined as the sum of the inherent filtration plus any added filtration. The inherent filtration of various tubes is listed in the appendix (assume 0.5 mm for unlisted tubes) on page 47.

Example: In addition to the 0.5 mm aluminum equivalent inherent filtration in the General Electric unit, 1.5 mm of aluminum (added filtration) are present at the tube port. Therefore, a total filtration of 2.0 mm aluminum equivalent is present before the survey, and this is coded in blocks (40-41). The variable collimator on this machine is indicated by the manufacturer to have no effective filtration. The surveyors add 0.5 mm aluminum equivalent to the tube port. The total filtration after the survey is 2.5 mm, and this amount is coded in blocks (42-43). The data is filled out on the form as follows:



9. FILTRATION

A. TOTAL MM. ALUMINUM EQUIVALENT

A. BEFORE 2 0

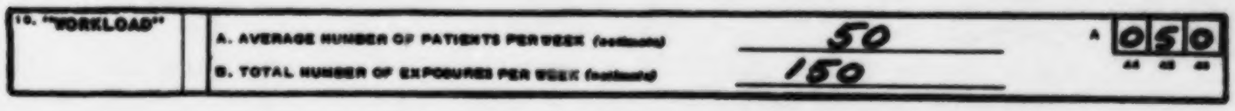
B. AFTER 2 5

Item 10, "Workload"*

A. Average Number of Patients Per Week - Code blocks (44-46) are used to indicate the total number of patients radiographed during an average week using a particular machine. Note that this is the number of patients, not the number of exposures or films.

B. Number of Exposures Per Week - The average number of times, per week, that the X-ray tube is activated with a patient in the useful beam.

Example: On this General Electric machine Memorial Hospital averages about fifty patients per week. For each of these patients, an average of three exposures is made for a total of one hundred and fifty per week. Note that only the number of patients is coded in blocks (44-46). The totals for Memorial Hospital would be recorded as follows:



10. "WORKLOAD"

A. AVERAGE NUMBER OF PATIENTS PER WEEK (estimate) 50

B. TOTAL NUMBER OF EXPOSURES PER WEEK (estimate) 150

A 0 5 0

Item 11, Usual Procedures

This item concerns radiographic techniques and actual operating procedures. While space is provided for three common examinations, only two of these are coded. (Code the two most common types performed with the machine). In cases where only one examination of a specific type is performed, the pertinent codes should be inserted in code blocks (47-60) and 0 inserted in code blocks (61-74).

---

* - "Workload" as used here is not the workload used in shielding calculations as defined in N.B.S. Handbook 76.

A. **Examination** - Code blocks (47) and (61) are used to indicate the type of examination (chest, etc.). Codes for the various types of examinations can be found in the Radiographic Coding and Punching Instructions in the appendix on page 52.

B. **kVp** - Code blocks (48-50) and (62-64) are used to indicate the average kVp used for the specified examination.

C. **mA and Time** - The average mA used for the specific examination and the time of the exposure in seconds.

D. **mAs** - Code blocks (51-53) and (65-67) are used to indicate the product of the mA used for the specific examination, multiplied by the exposure time for the examination. If the unit is phototimed use code 998.

E. **Exposures Per Week** - Obtain an estimate of the number of exposures per week for the specific examination.

F. **Film Size** - Code blocks (54) and (68) are used to indicate the size of film most commonly used for the specific examination. Use the film size codes in the Radiographic Coding and Punching Instructions in the appendix on page 52.

G. **Distance** - Code blocks (55-56) and (69-70) are used to indicate in whole inches, the measured target to film distance with the unit set up for an average examination of the type specified.

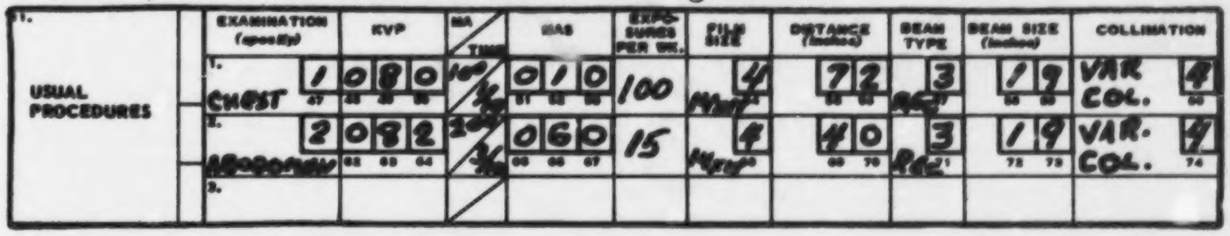
H. **Beam Type** - Code blocks (57) and (71) are used to indicate the geometric shape of the beam as determined by direct observation of the collimating device. The codes for beam type can be found in the Radiographic Coding and Punching Instructions in the appendix on page 53.

I. **Beam Size** - Code blocks (58-59) and (72-73) are used to indicate the beam size, in inches, measured on the longest dimension.

J. **Collimation** - Code blocks (60) and (74) are used to indicate whether or not the proper collimation is being employed during the technique under discussion. To be determined "proper" the overlap of the beam on the film should not exceed one inch on each side. For example, a rectangular beam using a 14" x 17" film should not exceed 16" x 19". If a circular beam is used, the following diameter is acceptable for the film indicated:

Film Size	Max. Acceptable Beam Diameter
14" x 17"	24"
10" x 12"	18"
8" x 10"	15"
5" x 7"	11"

Example: Memorial Hospital does chest examinations as the major type of radiographic examination. They use 80 kVp at 100 mA for 1/10th of a second as an average exposure for this examination using a film size of 14 x 17 inches at a 72 inch target to film distance. There are about 100 exposures of this type made every week. They have a variable collimator attached to the tube head which produces a 16 x 19 inch rectangular beam. Code blocks (47-60) would be coded in the following manner:

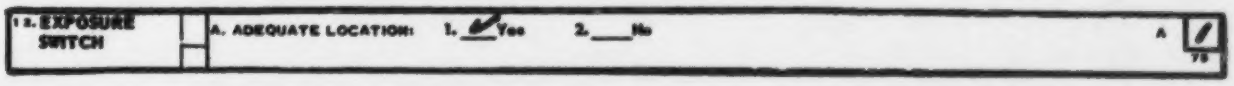


11. USUAL PROCEDURES	EXAMINATION (specify)	KVP	MA / TIME	MAS	EXPOSURES PER WK.	FILM SIZE	DISTANCE (inches)	BEAM TYPE	BEAM SIZE (inches)	COLLIMATION
1.	CHEST	1 0 8 0	100 / 1/10	0 1 0	100	4	7 2	REC 3	1 9	VAR COL. 4
2.	ABDOMEN	2 0 8 2	200 / 3/10	0 6 0	15	4	4 0	REC 3	1 9	VAR. COL. 4
3.										

Item 12, Exposure Switch

Code block (75) is used to indicate whether the location of the exposure switch is such that it allows the tube to be activated by the operator at a position other than behind the protective barrier.

Example: The exposure switch on this machine in Memorial Hospital is located permanently on the control console so that it cannot be reached if the operator is outside the barrier. Item 12 is coded as follows:



12. EXPOSURE SWITCH — A. ADEQUATE LOCATION: 1. ✓ Yes 2. ___ No — A 1 (75)

Item 13, Timer

Code block (76) is used to indicate the adequacy of the X-ray timer. An adequate timer terminates the exposure after a preset time has elapsed and the tube may not be activated with the timer on the zero setting. The surveyor should check to see if a deadman type switch is present (one which is so constructed that a circuit closing contact can only be maintained by a continuous pressure by the operator).

Example: The timer on the General Electric unit is checked and found to be adequate. The switch is of the deadman type. Item 13 is coded as follows:

13. TIMER	A. ADEQUATE:	1. [✓ Yes]	2. ___ No	A	1 76

Item 14, Protective Devices

A. Gonadal Shield for Patient - Code block (77) is used to indicate whether special aprons or other devices are used for protecting the area of the gonads.

B. Adequate Operator Protection - Code block (78) is used to indicate whether operator protection is sufficient. Using an appropriate survey meter, determine if the operator is receiving more than the exposure recommended in State regulations or in N.B.S. Handbook 76.

C. Adequate Primary and Secondary Barriers - Code block (79) is used to indicate whether barriers meet appropriate standards as recommended by N.B.S. Handbook 76 or State regulations.

D. Diagnostic-Type Tube Housing - Code block (80) is used to indicate whether the tube housing meets appropriate State regulations or N.B.S. Handbook 76 standards.

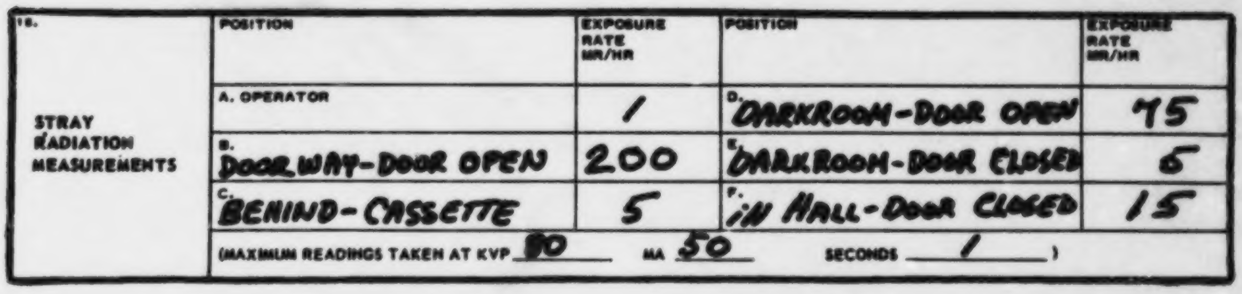
Example: The surveyors at Memorial Hospital found that there were no gonadal shields available for patient use. The exposure to the operator was found to be within recommended limits. The tube housing met the requirements for a diagnostic-type housing. The primary and secondary barriers proved to be adequate. Item 14 is coded as follows:

14. PROTECTIVE DEVICES	A. GONADAL SHIELD FOR PATIENT:	1. ___ Yes	2. [✓ No]	3. ___ N/A	A	2 77
	B. ADEQUATE OPERATOR PROTECTION:	1. [✓ Yes]	2. ___ No		B	1 78
	C. ADEQUATE PRIMARY AND SECONDARY BARRIERS:	1. [✓ Yes]	2. ___ No	3. ___ N/A	C	1 79
	D. DIAGNOSTIC-TYPE TUBE HOUSING:	1. [✓ Yes]	2. ___ No		D	1 80

Item 15, Stray Radiation Measurements

These measurements should be taken at the operator's position during radiography and at any other positions considered to be appropriate. Record the technical factors at which the machine is operated during these measurements, the position at which the readings are made and the exposure rate obtained.

Example: The following maximum readings were recorded by the surveyors at Memorial Hospital:



15.	POSITION	EXPOSURE RATE MR/HR	POSITION	EXPOSURE RATE MR/HR
STRAY RADIATION MEASUREMENTS	A. OPERATOR	1	D. DARKROOM-DOOR OPEN	75
	B. DOOR WAY-DOOR OPEN	200	E. DARKROOM-DOOR CLOSED	6
	C. BEHIND-CASSETTE	5	F. IN HALL-DOOR CLOSED	15
	(MAXIMUM READINGS TAKEN AT KVP 80 MA 50 SECONDS 1)			

Item 16, Surveyors - Self-explanatory

The reverse side of the Radiographic Form may be utilized for additional remarks as well as drawing floor plans, shielding data, etc.

BLANK PAGE

FLUOROSCOPIC FORM

The Fluoroscopic Coding and Punching Instructions can be found on page 55 and a completed form is shown on page 79.

Items 1 Through 7

The first seven items are identical to the corresponding items on the Facility and Radiographic Forms with the exception of item 6, code block (13) which is used to indicate the type of form being completed; for the Fluoroscopic Form the code is 3. Code blocks (14-15) are used to indicate the numerical sequence of the Fluoroscopic Forms, thus the code would be 01 for the first; 02 for the second and so on. Code blocks (16-17) are used to indicate the total number of Fluoroscopic Forms completed for the facility.

Item 8, Equipment Identification

The procedure for obtaining this information is similar to that followed in completing Sections A, B and D of the Radiographic Form.

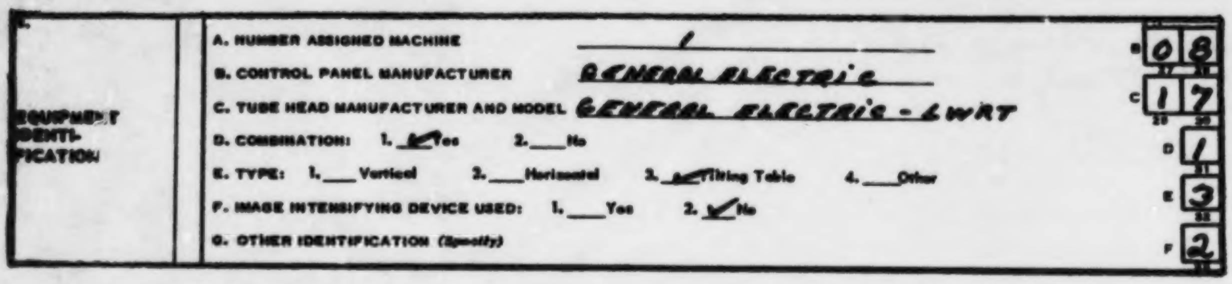
C. Tube Head Manufacturer and Model - Code blocks (27-28) may not be identical to the same item on the Radiographic Form for a combination machine. A list of codes for manufacturers and models can be found in the Fluoroscopic Coding and Punching Instructions in the appendix on page 57.

E. Type - Code block (32) is used to indicate the various operating positions of the fluoroscope. "Vertical" implies the examination can be done only while the patient is standing. "Horizontal" implies the examination can be performed only with the patient in a horizontal position. "Tilting table" refers to a table which can be moved to both a vertical and horizontal position. If the unit does not fall into any one of these categories, it is classified as "Other" and explained in "Remarks".

F. Image Intensifying Device Used - Code block (33) is used to indicate the presence or absence of an image intensifier.

G. Other - This section allows the surveyor to further identify the unit.

Example: Continue with the survey of the combination machine. Sections A, B and D will appear as they do on the Radiographic Form. The fluoroscopic tube proves to be a General Electric LWRT; the fluoroscope is used with a tilting table; and there is no image intensification device employed. Item 8, when completed, appears as: (See example on following page).



QUIPMENT
DENTI-
FICATION

A. NUMBER ASSIGNED MACHINE 1
B. CONTROL PANEL MANUFACTURER GENERAL ELECTRIC
C. TUBE HEAD MANUFACTURER AND MODEL GENERAL ELECTRIC - LWRT
D. COMBINATION: [✓ 1. Yes] 2.___ No
E. TYPE: 1.___ Vertical 2.___ Horizontal [✓ 3. Tilting Table] 4.___ Other
F. IMAGE INTENSIFYING DEVICE USED: 1.___ Yes [✓ 2. No]
G. OTHER IDENTIFICATION (Specify)

B 0 8
C 1 7
D 1
E 3
F 2

Item 9. Accessory Shielding

A. Leaded Gloves - Code block (34) is used to indicate the availability of leaded gloves. They should be available, in good condition and in use.

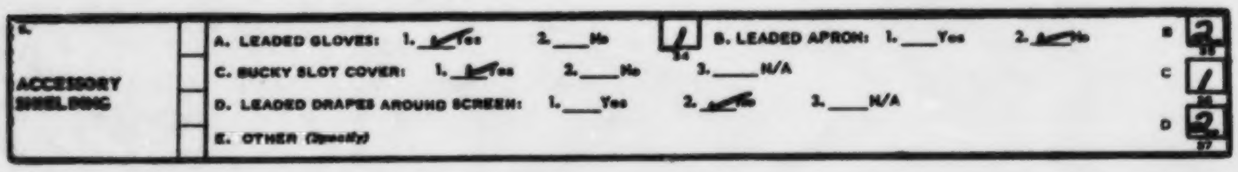
B. Leaded Apron - Code block (35) is used to indicate the availability of a leaded apron which should be in good condition and in use. All leaded apparel of this nature should be carefully checked for cracks in the protective leaded rubber within.

C. Bucky Slot Cover - Code block (36) is used to indicate the presence or absence of a Bucky slot cover on the operator's side of the table. Code 3, N/A, would apply in cases such as the survey of an upright fluoroscope.

D. Leaded Drapes - Code block (37) is used to indicate the presence or absence of leaded drapes affording protection to the operator.

E. Other - This item may be used for any additional information.

Example: Upon inspection the surveyors find that leaded gloves and apron are available, but the apron is sufficiently cracked to permit radiation to pass through it. Therefore, it is not adequate. A Bucky slot cover is present, but leaded drapes are not present. Item 9 appears as:



ACCESSORY
SHIELDING

A. LEADED GLOVES: [✓ 1. Yes] 2.___ No 1
B. LEADED APRON: 1.___ Yes [✓ 2. No]
C. BUCKY SLOT COVER: [✓ 1. Yes] 2.___ No 3.___ N/A
D. LEADED DRAPES AROUND SCREEN: 1.___ Yes [✓ 2. No] 3.___ N/A
E. OTHER (Specify)

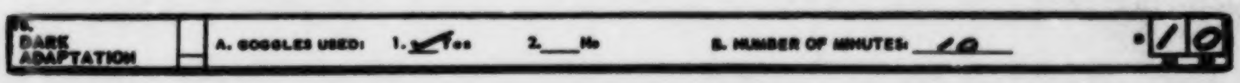
B 2
C 1
D 2

Item 10, Dark Adaptation

A. Goggles Used - Use of goggles should be noted.

B. Number of Minutes - Code blocks (38-39) are used to indicate the average time, in whole minutes, that dark adaptation goggles are worn prior to fluoroscopy.

Example: The radiologist states that he uses goggles and dark adapts for a minimum of ten minutes. Item 10 then appears as follows:



10. DARK ADAPTATION	A. GOGGLES USED: 1. ✓ Yes 2. ___ No	B. NUMBER OF MINUTES: 10	1	0

Item 11, Usual Procedures

This item concerns fluoroscopic techniques and actual operating procedures.

Examination - Of the three spaces provided, two are preprinted with a specified examination (Upper G.I. and Lower G.I.). The third space may be used for any other fluoroscopic examination thought to be appropriate.

kVp - Code blocks (40-42) are used to indicate the average kVp used for Upper G.I. fluoroscopic examinations. If this examination is not performed enter 0 in these blocks. Code blocks (48-50) are used to indicate the average kVp used in a Lower G.I. examination. If this technique is not used enter 0 in these blocks. KVp for any other examination may be inserted in the third uncoded space provided.

mA - Code blocks (43-44) are used to indicate the average mA used in an Upper G.I. examination. If this examination is not performed enter 0 in these blocks. Code blocks (51-52) are used to indicate the average mA used in a Lower G.I. examination. If this examination is not done enter 0 in these blocks. The mA for any other examination may be entered in the third space provided.

Minutes Tube Activated Per Examination - Code blocks (45) and (53) are used to indicate the estimated average total on-time, expressed in whole minutes, of the fluoroscopic tube during the specified examination. If an examination is not performed enter 0 in the appropriate code block. Tube on-time for any other examination may be entered in the third space provided.

Examinations Per Week - Code blocks (46-47) are used to indicate the number of Upper G.I.'s performed per week and code blocks (54-55) are used to indicate the number of Lower G.I.'s performed per week. If either, or both, of these examinations is not performed enter 0 in the appropriate coding blocks. Enter in code blocks (56-57) the number of examinations done per week for any other specified examination. This is the only data coded for this examination.

Code blocks (58-60) are used to indicate the total milliampere-minutes per week for all types of examinations. This figure is calculated in the following manner:

mA/per exam x min/per exam x exams per week = mA-MIN/wk per exam

This calculation is made for each type of examination performed, and the results are added together to give the total mA-MIN/week.

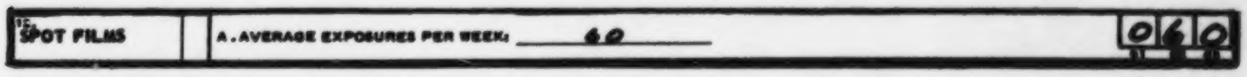
Example: Both Upper and Lower G.I.'s are performed at Memorial Hospital. The technique for an Upper G.I. is reported as: 90 kVp 3 mA, 3 minutes tube activation time, and approximately 10 exams per week. The technique for a Lower G.I. is: 90 kVp, 3 mA, 4 minutes tube activation time, and 5 exams per week. It is also reported that other examinations are infrequent and vary in technical factors and number only about 5 per week. So an average mA (3) and time (5 minutes) is determined for these 5 exams, and this is included in the total. The total mA-MIN per week is found to be 225 mA-MIN/wk. (3 x 3 x 10) + (3 x 4 x 5) + (3 x 5 x 5) = 225. Item 11 is coded as follows:

11.	EXAMINATION	KVP	MA	MINUTES TUBE ACTIVATED PER EXAMINATION	EXAMINATIONS PER WEEK
USUAL PROCEDURES	A. UPPER G. I.	090	03	3	10
	B. LOWER G.I.	090	03	4	05
	C. OTHER (Specify) various		03	5	05
	D. TOTAL MA-MIN/ WEEK				225

Item 12, Spot Films

If there is a spot film device on the fluoroscope, ask the practitioner or technician to estimate the number of spot film exposures each week and enter this figure in blocks (61-63). If a spot film device is not present, enter 0 in the coding blocks.

Example: At Memorial Hospital the spot film device on the fluoroscope is used for approximately 60 exposures per week. Item 12 appears as follows:



12. SPOT FILMS		A. AVERAGE EXPOSURES PER WEEK: 60	0	6	0

Item 13, Screen

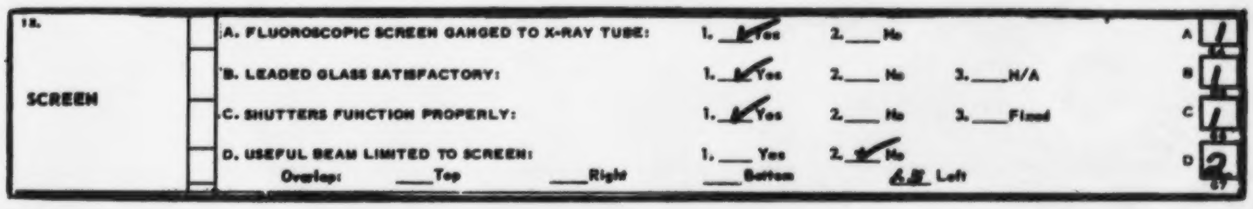
A. Screen Ganged to X-ray Tube - Code block (64) is used to indicate whether the fluoroscopic screen and the X-ray tube are interlocked so that they move as a single unit.

B. Leaded Glass Satisfactory - Code block (65) is used to indicate the presence of lead glass on the fluoroscopic screen. NOTE: IT IS ESSENTIAL THAT THIS BE CHECKED BEFORE PROCEEDING WITH THE SURVEY. IF LEADED GLASS IS NOT PRESENT, THE SURVEY SHOULD NOT CONTINUE.

C. Shutters Function Properly - Code block (66) is used to indicate whether the shutters function properly. If they fail to operate or operate erratically, they should be considered inadequate.

D. Useful Beam Limited to Screen - Code block (67) is used to indicate whether the useful beam is restricted to the primary barrier. If an overlap appears, it is recorded in inches on the form.

Example: For the unit being surveyed, it is found that the tube and screen are linked together. The measurement taken through the screen gave a reading of 30 mR/hr, so lead glass is present. The shutters are found to function properly, and the useful beam exceeds the screen by 1½ inches on the left side. Item 13 is coded in this way:



13. SCREEN		A. FLUOROSCOPIC SCREEN GANGED TO X-RAY TUBE:	1. ✓ Yes	2. ___ No		A 1
		B. LEADED GLASS SATISFACTORY:	1. ✓ Yes	2. ___ No	3. ___ N/A	B 1
		C. SHUTTERS FUNCTION PROPERLY:	1. ✓ Yes	2. ___ No	3. ___ Fixed	C 1
		D. USEFUL BEAM LIMITED TO SCREEN:	1. ___ Yes	2. ✓ No		D 2
		Overlap: ___ Top ___ Right	___ Bottom	1.5 Left		

Item 14, Distance

Code blocks (68-69) are used to indicate the tube target to panel top distance, in whole inches, as determined by the surveyor.

Example: Using the direct read scale provided by the Public Health Service, the surveyors find that the target to panel top distance is 18 inches. This result is directly coded into blocks (68-69). Item 14 appears as follows:

14. DISTANCE	☐	A. TARGET TO PANEL (inches): 18	A 1 8

Item 15, Roentgen Output

Code blocks (70-72) indicate the Roentgen output of the fluoroscopic tube, expressed in R/min, as measured at the panel top. (Note: There is a decimal point between blocks 71 and 72).

Example: The surveyors obtain a reading of 5.8 R/min. The result is entered on the form. Item 15 appears as follows:

15. ROENTGEN OUTPUT	☐	A. USEFUL BEAM AT PANEL SURFACE: 5.8 R/MIN.	A 0 5.8 70 71 72

Item 16, Filtration

Code blocks (73-74) are used to indicate the amount of filtration, expressed as millimeters of aluminum equivalent, determined at the start of the survey. Code blocks (75-76) are used to indicate the amount of filtration, expressed as millimeters of aluminum equivalent, determined at the end of the survey. Inherent filtrations for various tubes are listed in the Fluoroscopic Coding and Punching Instructions in the appendix on page 57. If a particular tube is not listed, assume its inherent filtration to be approximately 0.5 mm aluminum equivalent. The table top may also be considered equal to at least 0.5 mm. If it is evident that at least 2.5 mm aluminum equivalent is present, but the exact amount cannot be determined, enter the code 9.8.

Example: The surveyors determined that at least 2.5 mm aluminum equivalent filtration was present, but the exact quantity could not be determined.

16. FILTRATION	☐	A. TOTAL MM. ALUMINUM EQUIVALENT:	A. Before	9.8	B. After	9.8

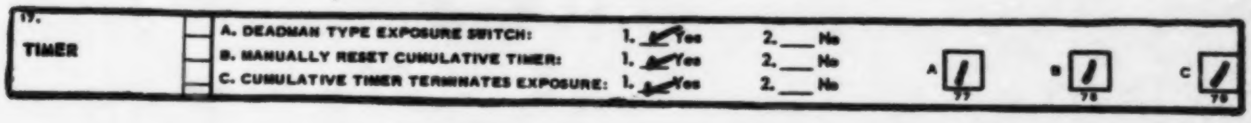
Item 17, Timer

A. Deadman Type Exposure Switch - Code block (77) is used to indicate whether the X-ray tube is deactivated upon release of the exposure switch (usually a foot pedal). Such a switch is considered to be of the deadman type.

B. Manually Reset Cumulative Timer - Code block (78) is used to indicate whether the fluoroscope is equipped with a cumulative timer which operates only when the tube is activated. The timer should have a five-minute limit after which it terminates the exposure or indicates to the operator by an audible signal or other means that the preset time has expired.

C. Cumulative Timer Terminates Exposure - Code block (79) is used to indicate whether the X-ray tube is deactivated when the predetermined limit on the cumulative timer has been reached.

Example: The General Electric unit has a deadman type exposure switch and a manually reset cumulative timer which terminates the exposure. Item 17 is coded as follows:

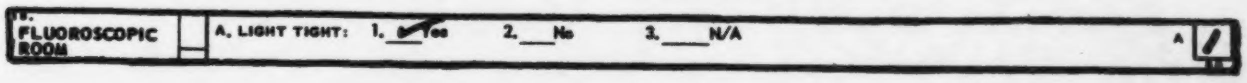


17. TIMER
A. DEADMAN TYPE EXPOSURE SWITCH: 1. ✓ Yes 2. ___ No
B. MANUALLY RESET CUMULATIVE TIMER: 1. ✓ Yes 2. ___ No
C. CUMULATIVE TIMER TERMINATES EXPOSURE: 1. ✓ Yes 2. ___ No
A 1 77 B 1 78 C 1 79

Item 18, Fluoroscopic Room

Code block (80) is used to indicate whether the fluoroscopic room can be made completely dark. This item can be checked simply by scanning the room for light leaks during the fluoroscopic survey.

Example: The fluoroscopic room at Memorial Hospital was found to be light tight. Item 18 is coded as follows:

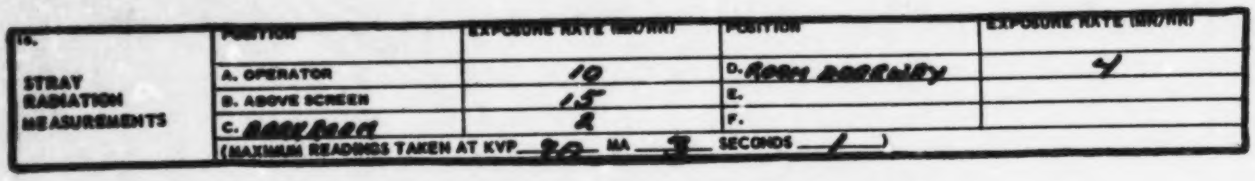


18. FLUOROSCOPIC ROOM
A. LIGHT TIGHT: 1. ✓ Yes 2. ___ No 3. ___ N/A
A 1

Item 19, Stray Radiation Measurements

These measurements should be taken at the operator's position and the assistant's position during fluoroscopy and at any other place in the room that appears appropriate. Record the technical factors at which the machine is being operated, the position at which the readings are made, and the exposure rate obtained.

Example: The following results were obtained for stray radiation measurements in the fluoroscopic room:



19. STRAY RADIATION MEASUREMENTS	POSITION	EXPOSURE RATE (MR/HR)	POSITION	EXPOSURE RATE (MR/HR)
	A. OPERATOR	10	D. ROOM DOORWAY	4
	B. ABOVE SCREEN	15	E.	
	C. DARK ROOM	2	F.	
	(MAXIMUM READINGS TAKEN AT KVP 90 MA 3 SECONDS 1)			

Item 20, Surveyors

The name of each surveyor should be entered in the space provided.

The reverse side of the Fluoroscopic Form may be used to record any additional remarks the surveyors may choose. It can also be used to draw a floor plan of the room in which the fluoroscope is located. Shielding data for this room may also be entered on the reverse side of the Fluoroscopic Form.

THERAPY FORM

A separate Therapy Form is completed for each therapy tube or teletherapy head and its associated equipment. Items 1-5 and item 7 are identical to the Facility Form. Item 6, code block (13) is preprinted with the number 4, the identifying code for a Therapy Form. Code blocks (14-15) are used to indicate the numerical sequence of the Therapy Forms and code blocks (16-17) are used to indicate the total number of Therapy Forms completed for the facility. The Therapy Coding and Punching Instructions can be found on page 67 and a completed form is shown on pages 81 and 83.

Item 8, Equipment Identification

A. Number Assigned Unit - A consecutive number system is recommended for identification of each unit within the facility and this should coincide with the numbers in code blocks (14-15).

B. Radiation Source - Code block (27) is used to indicate the specific material or device which produces the radiation. See the listing in the Therapeutic Coding and Punching Instructions on page 68.

C. Unit Manufacturer - Code blocks (28-29) are used to indicate the manufacturer which produced the X-ray or teletherapy machine. A partial list of manufacturers may be found in the Therapeutic Coding and Punching Instructions on page 68.

D. Type of Unit - Code block (30) is used to indicate the energy and type of the therapy source as follows:

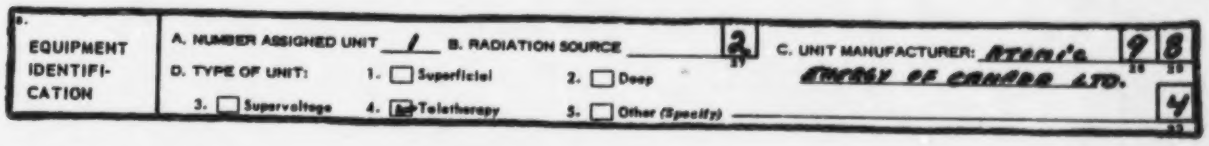
Superficial - Less than 150 kVp maximum

Deep - 150 kVp to 450 kVp

Supervoltage - Greater than 450 kVp maximum

Teletherapy - Utilizing a radioactive material

Example: Memorial Hospital has a cobalt 60 teletherapy unit. The unit was made by Atomic Energy of Canada Limited. This is the first therapy unit surveyed in Memorial Hospital. Item 8 would be coded as follows:



8. EQUIPMENT IDENTIFICATION

A. NUMBER ASSIGNED UNIT 1 B. RADIATION SOURCE ____ 2 (27)
C. UNIT MANUFACTURER: ATOMIC ENERGY OF CANADA LTD. 9 (28) 8 (29)
D. TYPE OF UNIT: 1. ☐ Superficial 2. ☐ Deep 3. ☐ Supervoltage 4. ☒ Teletherapy 5. ☐ Other (Specify) ____ 4 (30)

Item 9, "Workload"

A. Average Time Per Treatment (Min.) - Code blocks (31-32) are used to indicate the time, in whole minutes, for an average therapy treatment.

B. Average Number of Treatments Per Week - Code blocks (33-35) are used to indicate the total weekly average of all X-ray or teletherapy treatments.

C. Maximum kVp Used - Code blocks (36-39) are used to indicate the maximum kVp used for X-ray therapy.

D. Maximum mA Used - Code blocks (40-41) are used to indicate the maximum mA used for X-ray treatments.

E. Average mA-MIN Per Week - Code blocks (42-45) are used to indicate the calculated mA-MIN for an average X-ray therapy week. It may be calculated using the formula:

$$\text{(Avg. time/treatment)} \times \text{(Avg. number treatments/wk)} \times \text{(Max. mA used)} = \text{Avg. mA-MIN/Wk}$$

F. Strength of Radionuclide (RHM = Roentgens Per Hour at One Meter) - Code blocks (46-49) are used to indicate the Roentgens per hour at one meter in the useful beam of a teletherapy unit at the time of the last survey.

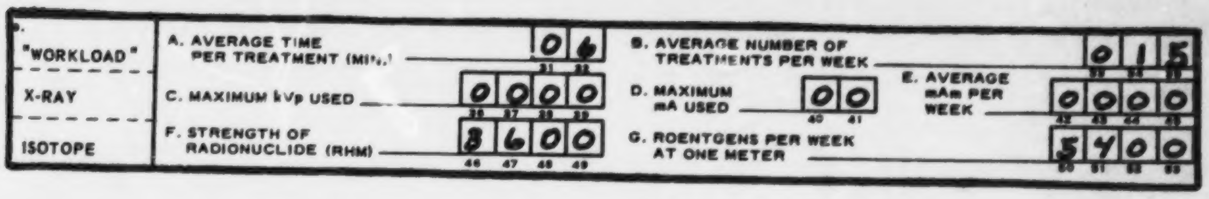
G. Roentgens Per Week at One Meter - Code blocks (50-53) are used to indicate the average weekly total of radiation from the exposed source of a teletherapy unit. This is expressed as Roentgens per week measured at one meter and may be calculated from the following formula:

$$\text{(Avg. on-time/treatment)} \times \text{(Avg. number treatments/wk)} \times \text{(RHM)} \left(\frac{\text{hr}}{60\text{ min}}\right) = \text{R/WK at one meter}$$

Example: The average time per treatment using the Co^{60} unit in Memorial Hospital is 6 minutes. Approximately 15 treatments are done per week with this machine. Since this is a Co^{60} unit, code blocks (36-45) pertaining to X-ray therapy are coded as 0. The strength of the radionuclide in RHM is found to be 3600 Roentgens per hour at one meter. Roentgens per week at one meter are calculated from the formula by simple substitution:

$$(6)\ (15)\ (3600)\ \left(\frac{1}{60}\right) = 5400 \text{ R/WK at one meter}$$

Item 9 would be coded as follows:



9. "WORKLOAD"

A. AVERAGE TIME PER TREATMENT (MIN.) 0 6

B. AVERAGE NUMBER OF TREATMENTS PER WEEK 0 1 5

X-RAY

C. MAXIMUM kVp USED 0 0 0 0

D. MAXIMUM mA USED 0 0

E. AVERAGE mAm PER WEEK 0 0 0 0

ISOTOPE

F. STRENGTH OF RADIONUCLIDE (RHM) 3 6 0 0

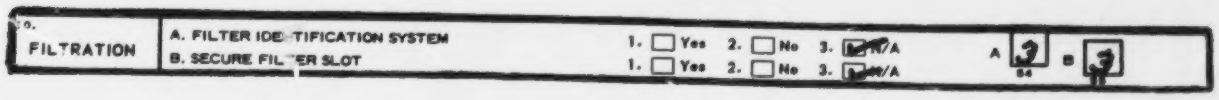
G. ROENTGENS PER WEEK AT ONE METER 5 4 0 0

Item 10, Filtration

A. Filter Identification System - Code block (54) is used to indicate whether the system is so arranged as to minimize the possibility of error in filter selection. The thickness and material of the filter should be easily determined both before and after installation.

B. Secure Filter Slot - Code block (55) is used to indicate whether the filters are secured in place so that they are prevented from dropping out during treatment.

Example: Since this is a teletherapy unit, no filters are used. Item 10 would be coded as follows:



10. FILTRATION

A. FILTER IDENTIFICATION SYSTEM 1. ☐ Yes 2. ☐ No 3. ☑ N/A A 3

B. SECURE FILTER SLOT 1. ☐ Yes 2. ☐ No 3. ☑ N/A B 3

Item 11, Collimation

A. Shutter Position Indicated at Control - Code block (56) is used to indicate whether equipment utilizing shutters to control the useful beam has a shutter position indicator on the control. A beam on - beam off indicator, either visual or audible, should be present at some place on the control panel of all machines.

B. Various Port Sizes Available - Code block (57) is used to indicate whether a selection of collimators or a variable collimator is available.

C. Lead Rubber, Foil, Etc., to Limit Field - Code block (58) is used to indicate whether radiation stopping devices are available to partially block the radiation field.

Example: The teletherapy unit in Memorial Hospital has a green beam off light and a red beam on light on the control panel. An adjustable diaphram allows various sizes of treatment fields, and lead rubber devices to limit the field are not present. Item 11 would be coded:

1. COLLIMATION	A. SHUTTER POSITION INDICATED AT CONTROL	1. ☑ Yes	2. ☐ No	3. ☐ N/A	A 1 (56)
	B. VARIOUS PORT SIZES AVAILABLE	1. ☑ Yes	2. ☐ No	3. ☐ N/A	B 1 (57)
	C. LEAD RUBBER, FOIL, ETC., TO LIMIT FIELD	1. ☐ Yes	2. ☑ No	3. ☐ N/A	C 2 (58)

Item 12, Protective Qualities and Descriptive Information

A. Type of Treatment - Code block (59) is used to indicate whether the beam of the unit can be rotated during treatment or must remain stationary. A unit having only an adjustable head is considered to be stationary.

B. Adequate Interlock System - Code block (60) is used to indicate whether interlocks are present and operating so that when any door to the treatment room is opened either the machine will be shut off automatically or the radiation level within the room will be reduced to an average of not more than 2 mR/hr and a maximum of 10 mR/hr at a distance of 1 meter in any direction from the target. After such a shutoff, or reduction in output, it shall be possible to restore the machine to full operation only from the control panel.

C. Manually Reset Cumulative Timer - Code block (61) is used to indicate whether a timer is present which displays total on-time of the source, electronic or nuclide, and which can be reset only by hand.

D. Timer Terminates Exposure - Code block (62) is used to indicate whether there is a timer which will terminate the exposure automatically after a preset time regardless of other exposure-limiting devices which may be present.

E. Patient and Control Observed Simultaneously - Code block (63) is used to indicate whether windows, mirror systems, closed circuit television viewing screens or other means are used to allow observation of the patient and the control panel from a single position.

F. Patient - Operator Communication Available - Code block (64) is used to indicate whether there is provision for two-way oral communication with the patient from the control room.

G. Radiation Area Posted - Code block (65) is used to indicate whether a radiation warning statement is prominently posted outside of the radiation therapy room.

H. Primary Beam Shield Present - Code block (66) is used to indicate the presence of a primary beam shield which is an integral part of the unit.

I. Control Panel Locked When Not in Use - Code block (67) is used to indicate whether the equipment is provided with a locking device to prevent unauthorized use.

J. Source Calibrated Annually - Code block (68) is used to indicate whether the source, either electronic or nuclide, is calibrated at least once a year.

NOTE: Date of Last Calibration - Complete if information is available.

K. Therapeutic Type Protective Source Housing - Code block (69) is used to indicate whether the X-ray tube housing conforms to standards of therapeutic type protective housing. In the case of teletherapy apparatus, the housing conforms to the requirements for teletherapy type source housing.(1)

L. Primary and Secondary Barriers Adequate - Code block (70) is used to indicate whether all wall, floor, and ceiling areas that can be struck by the useful beam, plus a border of one foot, are provided with primary protective barriers. Determine if all wall, floor, and ceiling areas that, because of restrictions in the orientation of the useful beam, cannot be struck by the useful beam are provided with secondary barriers.

M. Adequate Operator Protection - Code block (71) is used to indicate whether the operator is adequately protected. A protective booth or a location in a separate room should be used for X-ray equipment operating over 150 kVp or teletherapy units.

N. Beam Monitoring Device - Code block (72) is used to indicate whether a beam monitoring device is fixed in the useful beam.

---

(1) - PHS Form 4495-8, Therapeutic Type Protective Source Housing Data, may be obtained by contacting the appropriate PHS regional representative.

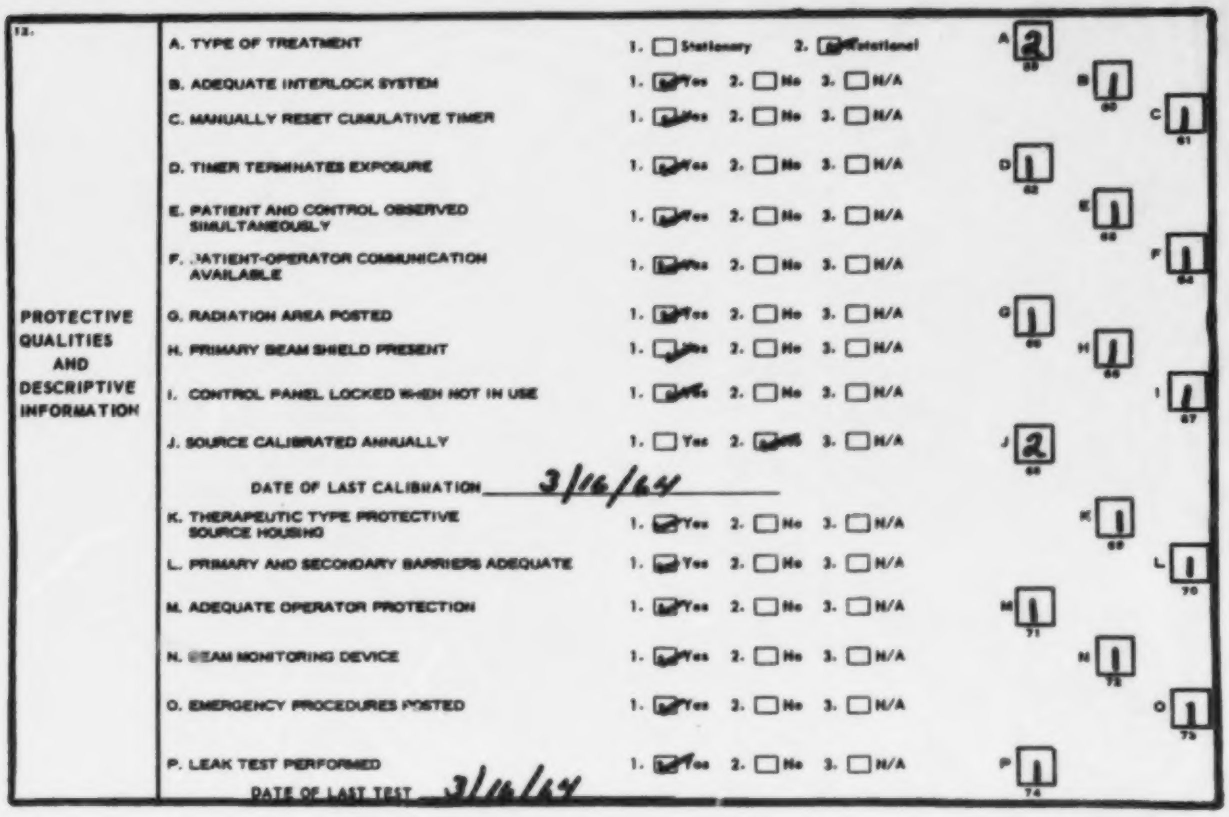
O. Emergency Procedures Posted - Code block (73) is used to indicate whether adequate written procedures for handling emergencies are prominently posted.

P Leak Test Performed - Code block (74) is used to indicate whether a leak test of a teletherapy source head has been performed.

NOTE: Date of Last Test - Complete if code 1 appears in block (74), otherwise leave blank.

Example: This teletherapy unit may be rotated through 360°. The interlock system on the doors to the treatment room will automatically reduce the radiation level within the room to acceptable limits and the machine may be restored to full operation only from the control panel. The cumulative timer, which must be manually reset, does terminate the exposure. A closed television circuit with a two-way communicator allows full patient-operator communication and observation while operating the control panel at the same time. An appropriate sign is found outside the treatment room door. The machine has a primary beam shield and the control panel may be activated only with a key. The Co^{60} source will be calibrated only once every 5 years but will receive maintenance every year. It was calibrated when it was installed but has not been recalibrated as of the time of this survey. The source housing and all barriers are checked and prove to be adequate. The control panel is located in a room adjacent to the therapy room. A Roentgen integrating dosimeter is present in the primary beam. Emergency procedures are prominently posted outside the room below the radiation sign. A leak test was performed on installing the machine, but has not been done since. Item 12 would be coded as follows:

(See following page.)



12. PROTECTIVE QUALITIES AND DESCRIPTIVE INFORMATION	A. TYPE OF TREATMENT	1. ☐ Stationary 2. ☑ Rotational	A 2	59
	B. ADEQUATE INTERLOCK SYSTEM	1. ☑ Yes 2. ☐ No 3. ☐ N/A	B 1	60
	C. MANUALLY RESET CUMULATIVE TIMER	1. ☑ Yes 2. ☐ No 3. ☐ N/A	C 1	61
	D. TIMER TERMINATES EXPOSURE	1. ☑ Yes 2. ☐ No 3. ☐ N/A	D 1	62
	E. PATIENT AND CONTROL OBSERVED SIMULTANEOUSLY	1. ☑ Yes 2. ☐ No 3. ☐ N/A	E 1	63
	F. PATIENT-OPERATOR COMMUNICATION AVAILABLE	1. ☑ Yes 2. ☐ No 3. ☐ N/A	F 1	64
	G. RADIATION AREA POSTED	1. ☑ Yes 2. ☐ No 3. ☐ N/A	G 1	65
	H. PRIMARY BEAM SHIELD PRESENT	1. ☑ Yes 2. ☐ No 3. ☐ N/A	H 1	66
	I. CONTROL PANEL LOCKED WHEN NOT IN USE	1. ☑ Yes 2. ☐ No 3. ☐ N/A	I 1	67
	J. SOURCE CALIBRATED ANNUALLY	1. ☐ Yes 2. ☑ No 3. ☐ N/A	J 2	68
	DATE OF LAST CALIBRATION 3/16/64			
	K. THERAPEUTIC TYPE PROTECTIVE SOURCE HOUSING	1. ☑ Yes 2. ☐ No 3. ☐ N/A	K 1	69
	L. PRIMARY AND SECONDARY BARRIERS ADEQUATE	1. ☑ Yes 2. ☐ No 3. ☐ N/A	L 1	70
	M. ADEQUATE OPERATOR PROTECTION	1. ☑ Yes 2. ☐ No 3. ☐ N/A	M 1	71
	N. BEAM MONITORING DEVICE	1. ☑ Yes 2. ☐ No 3. ☐ N/A	N 1	72
	O. EMERGENCY PROCEDURES POSTED	1. ☑ Yes 2. ☐ No 3. ☐ N/A	O 1	73
	P. LEAK TEST PERFORMED	1. ☑ Yes 2. ☐ No 3. ☐ N/A	P 1	74
	DATE OF LAST TEST 3/16/64			

Item 13, Surveyors

The name(s) of the surveyor(s) are inserted here.

Item 14, Radiation Measurements

This section is to be used by the surveyor to record all radiation measurements taken at the time of the survey.

Item 15, Sketch and/or Remarks

To be used by the surveyor as needed.

Item 16, Shielding Information

To be used by the surveyor as needed.

BLANK PAGE

X-RAY PROTECTION SURVEY REPORT

CODING AND PUNCHING INSTRUCTIONS

FACILITY INFORMATION

NOTE: Punch Nine (9) for all blank boxes, meaning "Unknown or Undetermined," unless otherwise stated.

Item No. Item and Remarks		Card Column	Code
1 NAME OF FACILITY			Do not code
2 TELEPHONE			Do not code
3 NUMBER ASSIGNED BY AGENCY		1 - 6	000001 - 999998
4 LOCATION (Street, Building, Room Number)			Do not code
5 DATE	Month	7 - 8	As indicated
	Day	9 - 10	
	Year	11 - 12	
6 CARD IDENTIFICATION		13	1 - Facility (always)
		14 - 15	01 - (Always)
		16 - 17	01 - 98 Indicates total number of Facility, Radiographic and Fluoroscopic and Therapy Forms for the Facility
7 STATE, COUNTY, CITY	State	18 - 19	01 - 51
	County	20 - 22	001 - 998
	City	23 - 26	0001 - 9998
			9999 - Unlisted Cities

Item No.	Item and Remarks	Card Column	Code
8	PERSON IN CHARGE OF X-RAY FACILITY		Do not code
9	PERSON RESPONSIBLE FOR RADIATION SAFETY		Do not code
10	PERSON INTERVIEWED		Do not code
11	PREVIOUS RADIATION SAFETY SURVEY	27	1 - Yes 2 - No 9 - Unknown or Undetermined
12	TYPE OF FACILITY	28	1 - Private practice 2 - Hospital 3 - Clinic 4 - Mobile 5 - Other (Specify) 9 - Unknown or Undetermined
13	TYPE OF PRACTICE	29 - 30	01 - General Practitioner 02 - Multiple Specialties 03 - Chest Diseases (Incl. Cardiology) 04 - Dermatology 05 - Ear, Nose, and Throat 06 - Gynecology and Obstetrics 07 - Internal Medicine 08 - Neurology 09 - Occupational Medicine 10 - Ophthalmology 11 - Orthopedics 12 - Osteopathy 13 - Pediatrics

Item No. Item and Remarks	Card Column	Code
		14 - Podiatry or Chiropody 15 - Radiology 16 - Surgery 17 - Urology 18 - Gastroenterology 19 - Hematology 20 - Dentistry 68 - Portable X-ray Service 71 - Allergy 72 - Physical Medicine 73 - Endocrinology 74 - Pathology 75 - Mobile Chest X-ray 80 - Chiropractors 85 - Veterinary 90 - Hospitals 98 - Other (Explain in Remarks) 99 - Unknown or Undetermined
14 PERSONNEL		
A. TOTAL NUMBER PERSONNEL OCCUPATIONALLY EXPOSED	31 - 32	01 - 98 As indicated 99 - Unknown or Undetermined
B. TOTAL NUMBER OF OPERATORS	33 - 34	01 - 98 As indicated 99 - Unknown or Undetermined
C. TOTAL NUMBER OF PERSONNEL MONITORED	35 - 36	00 - None 01 - 98 As indicated 99 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
D.	MONITORING SYSTEM EMPLOYED	37	0 - Never or none 1 - Currently 2 - Within past year 3 - Not within past year 9 - Unknown or Undetermined
E.	MONITORING SYSTEM ADEQUATE	38	1 - Yes 2 - No 3 - N.A. 9 - Unknown or Undetermined
F.	MONITORING RECORDS SATISFACTORY	39	1 - Yes 2 - No 3 - N.A. 9 - Unknown or Undetermined
G.	LEVELS/MONTH (Maximum mR)		Do not code
H.	NUMBER OVER 300 MR/QUARTER	40	0 - None 1 - 7 As indicated 8 - 8 or more 9 - Unknown or Undetermined
15	"WORKLOAD"		
A.	PATIENTS RADIOGRAPHED	41 - 44	0000 - None 0001 - One or less 0002 - 9998 - As reported 9999 - Unknown or Undetermined
B.	PATIENTS FLUOROSCOPED	45 - 47	000 - None 001 - One or less 002 - 998 - As reported 999 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
	C. THERAPY TREATMENTS	48 - 50	000 - None 001 - One or less 002 - 998 - As reported 999 - Unknown or Undetermined
16	EQUIPMENT		
	A. TOTAL NUMBER OF MACHINES AT THIS FACILITY	51 - 52	01 - 98 - As indicated 99 - Unknown or Undetermined
	B. TOTAL NUMBER OF TUBES	53 - 54	01 - 98 - As indicated 99 - Unknown or Undetermined
17	FILM AND SCREEN		
	A. FILM BRAND AND TYPE	55 - 56	

The following is a list of codes for the various film brands and types:

Code	Manufacturer	Type
00	None	
01	Ansco	High speed
02	Ansco	Non screen-used for direct exposure
03	Ansco	Fluorapid
04	Ansco	All types not specified
05 - 09 Reserved		
10	Dupont	Cronex I (slow speed)
11	Dupont	Cronex II (medium speed)
12	Dupont	Cronex III (high speed)
13	Dupont	"Fluoro-film"
14	Dupont	All types not specified
15 - 17 Reserved		
18	Gevaert	Seopix B - blue sensitive (I.S. - very high speed)

Code	Manufacturer	Type
19	Gevaert	Seopix G - Green sensitive (extreme speed)
20	Gevaert	Seopix G - ~~Green sensitive~~ (H.D.S. - high speed)
21	Gevaert	Curix-used with screen
22	Gevaert	Curix Rapid - used w/screen
23	Gevaert	Osray - non screen
24	Gevaert	All types not specified
25 - 30 Reserved		
31	Kodak	Royal Blue - very fast - used w/screen
32	Kodak	Blue Brand - fast - used w/screen
33	Kodak	Non screen - used for direct exposure
34	Kodak	Film for kidney surgery
35	Kodak	Photoflure film - green sensitive
36	Kodak	Photoflure film - blue sensitive
37	Kodak	Single coated - green sensitive
38	Kodak	Single coated - blue sensitive
39	Kodak	All types not specified
40 - 50 Reserved		
51	Ilfex (German)	Fast - high contrast - non screen
52	Ilfex (German)	Red seal - high kV - safety base, w/screen
53	Ilfex	All types not specified
54 - 60 Reserved		
61	Ilford	Standard - medium speed
62	Ilford	All types not specified
63	Polaroid	T-1001 film
64	Polaroid	T-3000X film
65	Polaroid	All types not specified
66 - 97 Reserved		
98	All other (specify)	
99	Unknown or Undetermined	

B. TYPE OF INTENSIFYING SCREEN	57 - 58	00 - None 01 - 98 - As indicated 99 - Unknown or Undetermined

The following is a list of codes for the various screen types:

Code	Type
00	None
01	High speed (may be called "super speed," R.V., Dura speed, T.F. and Ultra speed)
02	Medium speed (may be called "universal," mid-speed," "general purpose," "par," "standard," and "T".
03	Slow speed (may be called "fine grain," "high definition," "detail," "high resolution," "H.R.," "Ultra detail," and "U.D.")
98	Other (specify)
99	Unknown or Undetermined

Item No. Item and Remarks	Card Column	Code
18 DARKROOM PROCEDURE		
A. DARKROOM LIGHT TIGHT	59	0 - No darkroom 1 - Yes 2 - No 9 - Unknown or Undetermined
B. TYPE OF DEVELOPER	60 - 61	00 - No developer 01 - 98 - See codes below 99 - Unknown or Undetermined

The following is a list of codes for various types of developers:

00 - None
01 - Ace X-ray Service
02 - Ansco
03 - Astor
04 - Dupont

Item No.	Item and Remarks	Card Column	Code
			05 - G. E. 06 - G. E. Supermix 07 - Kerr FR 08 - Kodak 09 - Kodak (X-omat) 10 - Minimax 11 - Oneida 12 - Picker (Pix - FR Corp.) 13 - Rinn 14 - X. R. M. 15 - Buck X-ograph 16 - Hunt 17 - Ilford 18 - Simon 97 - Commercial Developer Service 98 - Other (specify) 99 - Unknown or Undetermined
C.	AUTOMATIC PROCESS	62	1 - Yes 2 - No 9 - Unknown or Undetermined
D.	HOW OFTEN CHANGED (weeks)	63 - 64	00 - No developer 01 - 52 - Number of weeks 53 - Less than once/year 99 - Unknown or Undetermined
E.	HOW OFTEN REPLENISHED (days)	65 - 66	00 - No developer 01 - 96 - As indicated 97 - Varies 98 - Automatic 99 - Unknown or Undetermined

Item No.	Item Remarks	Card Column	Code
	F. THERMOMETER PRESENT	67	1 - Yes 2 - No 3 - Thermostatically controlled 9 - Unknown or Undetermined
	G. TEMPERATURE INDICATED	68 - 69	00 - No developer 01 - 95 Indicated °F. 96 - 96 °F. or more 97 - Varies but has an indicator 98 - No indicator 99 - Unknown or Undetermined
	H. TIMER PRESENT	70	1 - Yes 2 - No 9 - Unknown or Undetermined
	I. TIME IN DEVELOPER (minutes)	71 - 72	0.0 - No developer 0.1 - 9.5 As indicated 9.6 - Greater than 9.5 9.7 - Varies 9.8 - Sight developed 9.9 - Unknown or Undetermined
19	RADIOACTIVE MATERIALS A. RADIUM	73	1 - Yes 2 - No 9 - Unknown or Undetermined
	B. OTHER ISOTOPES EVER PRESENT	74	1 - Yes 2 - No 9 - Unknown or Undetermined
20	REASON FOR SURVEY	75	1 - Initial 2 - Follow-up 3 - Resurvey

Item No.	Item Remarks	Card Column	Code
			4 - Requested 5 - Complaint 6 - Other 9 - Unknown or Undetermined
21	SURVEYORS		Do not code

X-RAY PROTECTION SURVEY REPORT

CODING AND PUNCHING INSTRUCTIONS

RADIOGRAPHIC INFORMATION

NOTE: Punch Nine (9) for all blank boxes, meaning "Unknown or Undetermined," unless otherwise stated.

Item No.	Item and Remarks		Card Column	Code
1	NAME OF FACILITY			Do not code
2	TELEPHONE			Do not code
3	NUMBER ASSIGNED BY AGENCY		1 - 6	000001 - 999998
4	LOCATION (Street, Building, Room Number)			Do not code
5	DATE	Month	7 - 8	As indicated
		Day	9 - 10	
		Year	11 - 12	
6	CARD IDENTIFICATION		13	2 - Radiographic (always)
			14 - 15	01 - 1st Radiographic Form 02 - 2nd Radiographic Form 10 - 10th Radiographic Form
			16 - 17	01 - 98 Indicates total number of Radiographic Forms for the facility

Item No.	Item and Remarks		Card Column	Code
7	FACILITY LOCATION	State	18 - 19	01 - 51
		County	20 - 22	001 - 998
		City	23 - 26	0001 - 9998 9999 - Unlisted cities
8	EQUIPMENT IDENTIFICATION			
A.	NUMBER ASSIGNED UNIT			Do not code
B.	CONTROL PANEL MANUFACTURER		27 - 28	01 - 97 See codes below 98 - All other 99 - Unknown or Undetermined

The following is a list of codes for medical X-ray units by manufacturers:

Code	Manufacturer
00	None
01	Adams
02	A. S. Aloe Co.
03	Borg (Warner)
04	Continental
05	Engeln
06	Fischer
07	Franklin X-ray Corp.
08	General Electric
09	G. M. McFedrier
10	Grenz-Ray
11	Humphrey
12	Keleket (Kelly-Koett)
13	Liebel Florsheim
14	Mattern
15	Meyer
16	Norelco
17	Pangelly
18	Philips
19	Picker
20	Pony
21	Professional Equipment Co. (Profexray)

Item No.	Item and Remarks	Card Column	Code

Code	Manufacturer
22	Ritter
23	Schonander
24	Siemens
25	Standard
26	Universal
27	Waite and Bartlett
28	Waite Manufacturing
29	Wappler
30	Weber
31	Westinghouse
32	X-Cell-Ray
33	X.R.M.
34	Campbell
35	Field Mission Corp.
36	Mitchell
37	Meyer
98	All others (specify)
99	Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
C.	TUBE MANUFACTURER AND MODEL	29 - 30	00 - None 01 - 97 - As indicated 98 - All other 99 - Unknown or Undetermined

The following is a list of codes for tube manufacturers and models:

CODE	MAKE	INHERENT FILTRATION (mm.) (APPROXIMATE)	MODEL
00	None		
01	Aperex		Unknown or all models not specified
02	Aperex	0.7	55
03	Continental	0.5	All models
04	Fischer	0.5	All medical models
05	Fischer	0.5	All dental models

CODE	MAKE	INHERENT FILTRATION (mm.) (APPROXIMATE)	MODEL
06	Mattern		Unknown or all models not specified
07	Mattern	0.5	MR 60
08	Philips	0.7	All medical models
09	Philips	1.0	All dental models
10	G. E.		Unknown or all models not specified
11	G. E.		DX
12	G. E.	0.5	DXC
13	G. E.	2.0	HRT (Includes HRTB, etc.)
14	G. E.	1.0	HRT II
15	G. E.	1.0	HRT III
16	G. E.	2.0	LRT
17	G. E.	0.5	LWRT
18	G. E.		CRT
19	G. E.		All dental
	G. E.	0.9	CDX
	G. E.	1.4	CDX-E
	G. E.	1.5	GE-70
	G. E.	1.5	GE-90
20	G. E.	0.5	HD, HDN, HDS
21	Dunlee		Unknown or all models not specified
22	Dunlee	0.5	HRZ-1
23	Dunlee	0.5	HRZ-3
24	Dunlee	0.5	HRZ-4, 5
25	Dunlee	0.5	HRZ-7
26	Dunlee	0.5	HRZ-9
27	Dunlee	0.5	HRZ-10
28	Dunlee	(Variable) 0.1 - 0.5	HRZ-331
29	Reserved		
30	Machlett		Unknown or all models not specified
31	Machlett	0.5	Aeromax 8
32	Machlett	0.5	Aeromax 12
33	Machlett	0.5	Aeromax 15
34	Machlett	0.5	Aeromax 21
35	Machlett	0.5	Super Aeromax
36	Machlett	0.5	Hydromax

CODE	MAKE	INHERENT FILTRATION (mm.) (APPROXIMATE)	MODEL
37	Machlett	0.5	Dynamax 20
38	Machlett	0.5	Dynamax 21
39	Machlett	0.5	Dynamax 25
40	Machlett	0.5	Dynamax 26
41	Machlett	0.5	Dynamax 30
42	Machlett	0.5	Dynamax 30G
43	Machlett	0.5	Dynamax 36
44	Machlett	0.5	Dynamax 40
45	Machlett	0.5	Dynamax 40G
46	Machlett	0.5	Dynamax 46, 52, 54
47	Machlett	0.5	Super Dynamax
48	Machlett	0.5	Super DX
49	Machlett	(1 mm additional in past) 1.0	DX 50
50	Machlett	0.5	DX 150
51	Machlett	0.7	Dynamax 50 A,B,C,D
52	Machlett	1.0	Dynamax 60, E625
53	Machlett	0.4	Hydromax 40
54	Machlett	0.5	HD-25, 26, 30
55	Machlett	0.4	LCMR, LCML, LCO-R, CYSL, SLT, CYR, CYM
56	Machlett	0.6	Thermax Model R
57	Weber		All dental models
	Weber	0.5	5,6,7,7A,9,6R,11R
	Weber	1.5	90
	Weber	2.5	12R
58	Westinghouse	0.5	All medical models
59	XRM		All dental models
	XRM	0.75	1B,2A,3A
	XRM	2.0	2B,3B
	XRM	2.0	90
60	Eureka		Unknown or all models not specified
61	Eureka	0.5	RA-49
62	Eureka	0.5	RA-51
63	Eureka	0.5	RA-52
64	Eureka	0.5	RA-53
65	Eureka	0.5	RA-59
66	Eureka	0.5	RA-60
67	Eureka	0.5	RA-69
68	Eureka	0.5	RA-70,71
69	Eureka	0.5	RA-73
70	Eureka	0.5	RA-79

Item No. Item and Remarks   Card Column   Code

CODE	MAKE	INHERENT FILTRATION (mm.) (APPROXIMATE)	MODEL
71	Eureka	0.5	RA-80
72	Eureka	0.5	RA-90
73	Eureka	0.5	SP-3
74	Eureka	0.5	SP-5
75	Eureka	0.5	SP-12
76	Eureka	0.5	Emerald 125
77	Eureka	1.0	Diamond 150
78-79	Reserved		
80	Picker		Unknown or all models not specified
81	Picker	0.5	PX 8
82	Picker	0.5	PX 9
83	Picker	0.5	PX 10-E
84	Reserved		
85	Profexray		Unknown or all models not specified
86	Profexray	0.5	A-2500 and 2500
87	Profexray	0.5	
88	Profexray	0.5	
89	Profexray	0.5	
90	Norelco		Unknown or all models not specified
91	Norelco	0.7	55 & U.T. 55
92	Norelco	0.7	125
93	Norelco	0.7	Rotalix
94	Norelco	2.0	All dental models
95	Ritter		All dental models
	Ritter	0.5	A,B,D
	Ritter	2.05	E,F
96	Universal	0.5	All medical models
97	Universal		All dental models
	Universal	0.75	Open tube
	Universal	2.0	Closed tube
98	All other (specify)		
99	Unknown or Undetermined		

D. COMBINATION	31	1 - Yes 2 - No 9 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
	E. TYPE	32	1 - Fixed Radiographic 2 - Photofluorographic 3 - Mobile 4 - Other (specify) 9 - Unknown or Undetermined
	F. NUMBER OF TUBES	33	As indicated
	G. MAXIMUM KVP	34 - 36	As indicated
	H. MAXIMUM MA	37 - 39	As indicated
9	FILTRATION		
	A. BEFORE	40 - 41	0.0 - 9.7 As determined 9.8 - At least 2.5 mm Al equivalent 9.9 - Unknown or Undetermined
	B. AFTER	42 - 43	0.0 - 9.7 As determined 9.8 - At least 2.5 mm Al equivalent 9.9 - Unknown or Undetermined
10	"WORKLOAD"		
	A. AVERAGE NUMBER OF PATIENTS PER WEEK	44 - 46	000 - None 001 - One or less 002 - 997 As indicated 998 - 998 or more 999 - Unknown or Undetermined
	B. TOTAL NUMBER OF EXPOSURES PER WEEK		Do not code

Item No. Item and Remarks	Card Column	Code
11 USUAL PROCEDURES		
EXAMINATION	47 & 61	0 - Not performed 1 - Chest, P.A. (20 cm.) 2 - Abdomen, P.A. (20 cm.) 3 - Extremities 4 - G. I. 5 - Skull 6 - Spine 7 - Other (specify)
KVP	48 - 50 & 62 - 64	000 - 998 As indicated 999 - Unknown or Undetermined
MA/TIME		Do not code
MAS	51 - 53 & 65 - 67	001 - 996 As calculated 997 - 997 or more MAS (Enter value in remarks) 998 - Phototimed 999 - Unknown or Undetermined
EXPOSURES PER WEEK		Do not code
FILM SIZE	54 & 68	1 - 5 x 7 2 - 8 x 10 3 - 10 x 12 4 - 14 x 17 5 - 14 x 36 6 - 8 x 36 7 - Photofluorographic 8 - All other (specify) 9 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
	DISTANCE (inches)	55 - 56 & 69 - 70	00 - 97 As indicated 98 - 98 inches or more 99 - Unknown or Undetermined
	BEAM TYPE	57 & 71	1 - Circular 2 - Square 3 - Rectangular 9 - Unknown or Undetermined
	BEAM SIZE (inches)	58 - 59 & 72 - 73	01 - 98 As indicated 99 - Unknown or Undetermined
	COLLIMATION	60 & 74	1 - Proper cone for film size 2 - Improper cone; proper cone available 3 - Proper cone not available 4 - Variable collimator 5 - Permanent collimation installed by surveyors 9 - Unknown or Undetermined
12	EXPOSURE SWITCH		
	A. ADEQUATE LOCATION	75	1 - Yes 2 - No 9 - Unknown or Undetermined
13	TIMER		
	A. ADEQUATE	76	1 - Yes 2 - No 9 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
14	PROTECTIVE DEVICES		
	A. GONADAL SHIELD FOR PATIENT	77	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
	B. ADEQUATE OPERATOR PROTECTION	78	1 - Yes 2 - No 9 - Unknown or Undetermined
	C. PRIMARY AND SECONDARY BARRIERS ADEQUATE	79	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
	D. DIAGNOSTIC TYPE TUBE HOUSING	80	1 - Yes 2 - No 9 - Unknown or Undetermined
15	STRAY RADIATION MEASUREMENTS (MAXIMUM READINGS)		Do not code
16	SURVEYORS		Do not code

ADDITIONAL REMARKS

Any additional survey data or remarks related to the specific radiographic unit in question may be entered on the reverse side of the page.

X-RAY PROTECTION SURVEY REPORT

CODING AND PUNCHING INSTRUCTIONS

FLUOROSCOPIC INFORMATION

NOTE: Punch Nine (9) for all blank boxes, meaning "Unknown or Undetermined," unless otherwise stated.

Item No.	Item and Remarks		Card Column	Code
1	NAME OF FACILITY			Do not code
2	TELEPHONE			Do not code
3	NUMBER ASSIGNED BY AGENCY		1 - 6	000001 - 999998
4	LOCATION (Street, Building, Room Number)			Do not code
5	DATE	Month Day Year	7 - 8 9 - 10 11 - 12	As indicated
6	CARD IDENTIFICATION		13	3 - Fluoroscopic (always)
			14 - 15	01 - 1st Fluoroscopic Form 02 - 2nd Fluoroscopic Form 10 - 10th Fluoroscopic Form
			16 - 17	01 - 98 Indicates total number of Fluoroscopic Forms for the Facility

Item No.	Item and Remarks	Card Column	Code
7	STATE, COUNTY, CITY	State 18 - 19	01 - 51
		County 20 - 22	001 - 998
		City 23 - 26	0001 - 9998
			9999 - Unlisted Cities
8	EQUIPMENT IDENTIFICATION		
	A. NUMBER ASSIGNED UNIT		Do not code
	B. CONTROL PANEL MANUFACTURER	27 - 28	01 - 97 As indicated 98 - All other 99 - Unknown or Undetermined

The following is a list of codes for medical X-ray units by manufacturers:

Code	Manufacturer
00	None
01	Adams
02	A. S. Aloe Co.
03	Borg (Warner)
04	Continental
05	Engeln
06	Fischer
07	Franklin X-ray Corp.
08	General Electric
09	G. M. McFedrier
10	Grenz-Ray
11	Humphrey
12	Keleket (Kelly-Koett)
13	Liebel Florsheim
14	Mattern
15	Meyer
16	Norelco
17	Pangelly
18	Philips
19	Picker
20	Pony
21	Professional Equipment Co. (Profexray)
22	Ritter

Item No. Item and Remarks | Card Column | Code

Code	Manufacturer
23	Schonander
24	Siemens
25	Standard
26	Universal
27	Waite & Bartlett
28	Waite Manufacturing Division, Inc.
29	Wappler
30	Weber
31	Westinghouse
32	X-Cell-Ray
33	XRM
34	Campbell
35	Field Mission Corp.
36	Mitchell
37	Meyer
98	All others (specify)
99	Unknown or Undetermined

Item No. Item and Remarks	Card Column	Code
C. TUBE MANUFACTURER AND MODEL	29 - 30	00 - None 01 - 97 As indicated 98 - All other 99 - Unknown or Undetermined

The following is a list of codes for tube manufacturers and models:

CODE	MAKE	INHERENT FILTRATION (mm.) (APPROXIMATE)	MODEL
00	None		
01	Aperex		Unknown or all models not specified
02	Aperex	0.7	55
03	Continental	0.5	All models
04	Fischer	0.5	All medical models
05	Fischer	0.5	All dental models
06	Mattern		Unknown or all models not specified
07	Mattern	0.5	MR 60
08	Philips	0.7	All medical models
09	Philips	1.0	All dental models

CODE	MAKE	INHERENT FILTRATION (mm.) (APPROXIMATE)	MODEL
10	G. E.	1.0	Unknown or all models not specified
11	G. E.		DX
12	G. E.	0.5	DXC
13	G. E.	2.0	HRT (Includes HRTB, etc.)
14	G. E.	1.0	HRT II
15	G. E.	1.0	HRT III
16	G. E.	2.0	LRT
17	G. E.	0.5	LWRT
18	G. E.		CRT
19	G. E.		All dental
	G. E.	0.9	CDX
	G. E.	1.4	CDX-E
	G. E.	1.5	GE-70
	G. E.	1.5	GE-90
20	G. E.	0.5	HD, HDN, HDS
21	Dunlee	0.5	Unknown or all models not specified
22	Dunlee	0.5	HRZ-1
23	Dunlee	0.5	HRZ-3
24	Dunlee	0.5	HRZ-4, 5
25	Dunlee	0.5	HRZ-7
26	Dunlee	0.5	HRZ-9
27	Dunlee	0.5	HRZ-10
28	Dunlee	(Variable) 0.1 - 0.5	HRZ-331
29	Reserved		
30	Machlett		Unknown or all models not specified
31	Machlett	0.5	Aeromax 8
32	Machlett	0.5	Aeromax 12
33	Machlett	0.5	Aeromax 15
34	Machlett	0.5	Aeromax 21
35	Machlett	0.5	Super Aeromax
36	Machlett	0.5	Hydromax
37	Machlett	0.5	Dynamax 20
38	Machlett	0.5	Dynamax 21
39	Machlett	0.5	Dynamax 25
40	Machlett	0.5	Dynamax 26
41	Machlett	0.5	Dynamax 30

CODE	MAKE	INHERENT FILTRATION (mm.) (APPROXIMATE)	MODEL
42	Machlett	0.5	Dynamax 30G
43	Machlett	0.5	Dynamax 36
44	Machlett	0.5	Dynamax 40
45	Machlett	0.5	Dynamax 40G
46	Machlett	0.5	Dynamax 46, 52, 54
47	Machlett	0.5	Super Dynamax
48	Machlett	0.5	Super DX
49	Machlett (1 mm. additional in past)	1.0	DX 50
50	Machlett	0.5	DX 150
51	Machlett	0.7	Dynamax 50 A,B,C,D
52	Machlett	1.0	Dynamax 60, E625
53	Machlett	0.4	Hydromax 40
54	Machlett	0.5	HD-25, 26, 30
55	Machlett	0.4	LCMR, LCML, LCO-R, CYSL, SLT, CYR, CYM
56	Machlett	0.6	Thermax Model R
57	Weber		All dental models
	Weber	0.5	5,6,7,7A,9,6R,11R
	Weber	1.5	90
	Weber	2.5	12R
58	Westinghouse	0.5	All medical models
59	XRM		All dental models
	XRM	0.75	1B,2A,3A
	XRM	2.0	2B,3B
	XRM	2.0	90
60	Eureka		Unknown or all models not specified
61	Eureka	0.5	RA-49
62	Eureka	0.5	RA-51
63	Eureka	0.5	RA-52
64	Eureka	0.5	RA-53
65	Eureka	0.5	RA-59
66	Eureka	0.5	RA-60
67	Eureka	0.5	RA-69
68	Eureka	0.5	RA-70, 71
69	Eureka	0.5	RA-73
70	Eureka	0.5	RA-79
71	Eureka	0.5	RA-80
72	Eureka	0.5	RA-90

CODE	MAKE	INHERENT FILTRATION (mm.) (APPROXIMATE)	MODEL
73	Eureka	0.5	SP-3
74	Eureka	0.5	SP-5
75	Eureka	0.5	SP-12
76	Eureka	0.5	Emerald 125
77	Eureka	1.0	Diamond 150
78-79	Reserved		
80	Picker		Unknown or all models not specified
81	Picker	0.5	PX 8
82	Picker	0.5	PX 9
83	Picker	0.5	PX 10-E
84	Reserved		
85	Profexray		Unknown or all models not specified
86	Profexray	0.5	A-2500 and 2500
87	Profexray	0.5	
88	Profexray	0.5	
89	Profexray	0.5	
90	Norelco		Unknown or all models not specified
91	Norelco	0.7	55 & U.T. 55
92	Norelco	0.7	125
93	Norelco	0.7	Rotalix
94	Norelco	2.0	All dental models
95	Ritter		All dental models
	Ritter	0.5	A,B,D,
	Ritter	2.05	E,F
96	Universal	0.5	All medical models
97	Universal		All dental models
	Universal	0.75	Open tube
	Universal	2.0	Closed tube
98	All other (specify)		
99	Unknown or Undetermined		

Item No. Item and Remarks	Card Column	Code
D. COMBINATION	31	1 - Yes 2 - No 9 - Unknown or Undetermined
E. TYPE	32	1 - Vertical 2 - Horizontal 3 - Tilting table 4 - Other 9 - Unknown or Undetermined
F. IMAGE INTENSIFYING DEVICE USED	33	1 - Yes 2 - No 9 - Undetermined
G. OTHER IDENTIFICATION		Do not code
9 ACCESSORY SHIELDING		
A. LEADED GLOVES	34	1 - Yes (or satisfactory) 2 - No (or unsatisfactory) 3 - Not applicable 9 - Unknown or Undetermined
B. LEADED APRON	35	1 - Yes (or satisfactory) 2 - No (or unsatisfactory) 3 - Not applicable 9 - Unknown or Undetermined
C. BUCKY SLOT COVER	36	1 - Yes (or satisfactory) 2 - No (or unsatisfactory) 3 - Not applicable 9 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
	D. LEADED DRAPES AROUND SCREEN	37	1 - Yes (or satisfactory) 2 - No (or unsatisfactory) 3 - Not applicable 9 - Unknown or Undetermined
	E. OTHER (specify)		Do not code
10	DARK ADAPTATION		
	A. GOGGLES USED		Do not code
	B. NUMBER OF MINUTES	38 - 39	00 - 98 As indicated 99 - Unknown or Undetermined
11	USUAL PROCEDURES		
	A & B		
	KVP	40 - 42 & 48 - 50	000 - Not performed 001 - 998 As determined 999 - Unknown or Undetermined
	MA	43 - 44 & 51 - 52	00 - Not performed 01 - 98 As determined 99 - Unknown or Undetermined
	MIN. TUBE ACTIVATED PER EXAM.	45 & 53	0 - Not performed 1-7 - As reported 8 - 8 minutes or more 9 - Unknown or Undetermined
	EXAMS PER WEEK	46 - 47 & 54 - 55 & 56 - 57	00 - None 01 - One or less 02 - 97 As indicated 98 - 98 exams or more 99 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
	C. OTHER (specify)		Do not code
	D. TOTAL MA-MIN/WEEK	58 - 60	000 - None 001 - 997 As indicated 998 - 998 or greater 999 - Unknown or Undetermined
12	SPOT FILMS		
	A. AVERAGE EXPOSURES PER WEEK	61 - 63	000 - None 001 - One or less 002 - 997 As indicated 998 - 998 or more 999 - Unknown or Undetermined
13	SCREEN		
	A. FLUOROSCOPIC SCREEN	64	1 - Yes 2 - No 9 - Unknown or Undetermined
	B. LEADED GLASS SATISFACTORY	65	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
	C. SHUTTERS FUNCTION PROPERLY	66	1 - Yes 2 - No 3 - Fixed 9 - Unknown or Undetermined
	D. USEFUL BEAM LIMITED TO SCREEN	67	1 - Yes 2 - No 9 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
14	DISTANCE		
	A. TARGET TO PANEL (inches)	68 - 69	01 - 98 As determined 99 - Unknown or undetermined
15	ROENTGEN OUTPUT		
	A. USEFUL BEAM AT PANEL SURFACE (R/Min.)	70 - 72	00.1 - 99.7 As determined 99.8 - 99.8 or more 99.9 - Unknown or Undetermined
16	FILTRATION (Total mm. Al. Equiv.)		
	A. BEFORE	73 - 74	0.0-9.7 - As determined 9.8 - At least 2.5 mm. Al. equivalent 9.9 - Unknown or Undetermined
	B. AFTER	75 - 76	0.0 - 9.7 As determined 9.8 - At least 2.5 mm. Al. equivalent 9.9 - Unknown or Undetermined
17	TIMER		
	A. DEADMAN-TYPE EXPOSURE SWITCH	77	1 - Yes 2 - No 9 - Unknown or Undetermined
	B. MANUALLY RESET CUMULATIVE TIMER	73	1 - Yes 2 - No 9 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
	C. CUMULATIVE TIMER TERMINATE EXPOSURE	79	1 - Yes 2 - No 9 - Unknown or Undetermined
18	FLUOROSCOPIC ROOM		
	A. LIGHT TIGHT	80	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
19	STRAY RADIATION MEASUREMENTS (Max. reading)		Do not code
20	SURVEYORS		Do not code

ADDITIONAL REMARKS

Any additional survey data or remarks related to the specific fluoroscopic unit in question may be entered on the reverse side of the page.

BLANK PAGE

X-RAY PROTECTION SURVEY REPORT

CODING AND PUNCHING INSTRUCTIONS

THERAPY INFORMATION

NOTE: Punch Nine (9) for all blank boxes, meaning "Unknown or Undetermined," unless otherwise stated.

Item No. Item and Remarks		Card Column	Code
1 NAME OF FACILITY			Do not code
2 TELEPHONE			Do not code
3 NUMBER ASSIGNED BY AGENCY		1 - 6	000001 - 999998
4 LOCATION (Street, Building, Room Number)			Do not code
5 DATE	Month	7 - 8	As indicated
	Day	9 - 10	
	Year	11 - 12	
6 CARD IDENTIFICATION		13	4 - Therapy (always)
		14 - 15	01 - 1st Therapy form 02 - 2nd Therapy form 10 - 10th Therapy form
		16 - 17	01 - 98 Indicates total number of Therapy Forms for the Facility

Item No. Item and Remarks	Card Column	Code
7 STATE, COUNTY, CITY	State 18 - 19	01 - 51
	County 20 - 22	001 - 998
	City 23 - 26	0001 - 9998
		9999 - Unlisted Cities

---

8 EQUIPMENT IDENTIFICATION		
A. NUMBER ASSIGNED UNIT		Do not code
B. RADIATION SOURCE	27	1 - X-ray 2 - Co^{60} 3 - Cs^{137} 4-7 - Reserved 8 - Other (specify)
C. UNIT MANUFACTURER	28 - 29	

The following is a list of codes for medical therapy units by manufacturers:

Code	Manufacturer
04	Continental X-ray Co.
08	General Electric
12	Keleket
18	Philips
19	Picker
21	Profexray (superficial)
24	Siemens
25	Standard
31	Westinghouse
33	XRM
38	Allis Chalmers
39	AEC Limited
40	Brake Shieb
41	High Voltage Engineering
42	Walker
43	Radiation Dynamics
98	All others (specify)

Item No. Item and Remarks	Card Column	Code
D. TYPE OF UNIT	30	1 - Superficial (less than 150 kVp maximum) 2 - Deep (150 kVp to 450 kVp) 3 - Supervoltage (greater than 450 kVp maximum) 4 - Teletherapy (utilizing a radioactive nuclide) 5 - Other (specify)
9 WORKLOAD		
A. AVERAGE TIME PER TREATMENT (Minutes)	31 - 32	00 - None 01 - 98 - As determined 99 - Unknown or Undetermined
B. AVERAGE NUMBER OF TREATMENTS PER WEEK	33 - 35	000 - None 001 - 997 - As determined 998 - 998 or greater 999 - Unknown or Undetermined
C. MAXIMUM KVP USED	36 - 39	0000 - Not performed 0001 - 9997 - As determined 9998 - 9998 or greater 9999 - Unknown or Undetermined
D. MAXIMUM MA USED	40 - 41	00 - Not performed 01 - 97 - As determined 98 - 98 or greater 99 - Unknown or Undetermined
E. AVERAGE MAM PER WEEK	42 - 45	0000 - None 0001 - 9997 - As calculated 9998 - 9998 or greater 9999 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
	F. STRENGTH OF RADIONUCLIDE (RHM - ROENTGENS PER HOUR AT ONE METER)	46 - 49	0000 - None 0001 - 9997 - As indicated 9998 - 9998 or greater 9999 - Unknown or Undetermined
	G. ROENTGENS PER WEEK AT ONE METER	50 - 53	0000 - None 0001 - 9997 - As calculated 9998 - 9998 or greater 9999 - Unknown or Undetermined
10	FILTRATION		
	A. FILTER IDENTIFICATION SYSTEM	54	1 - Yes 2 - No 3 - Not applicable
	B. SECURE FILTER SLOT	55	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
11	COLLIMATION		
	A. SHUTTER POSITION INDICATED AT CONTROL	56	1 - Yes 2 - No 3 - Not applicable
	B. VARIOUS PORT SIZES AVAILABLE	57	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined

Item No. Item and Remarks	Card Column	Code
C. LEAD RUBBER, FOIL, ETC., TO LIMIT FIELD	58	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
12 PROTECTIVE QUALITIES AND DESCRIPTIVE INFORMATION		
A. TYPE OF TREATMENT	59	1 - Stationary 2 - Rotational
B. ADEQUATE INTERLOCK SYSTEM	60	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermine
C. MANUALLY RESET CUMULATIVE TIMER	61	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
D. TIMER TERMINATES EXPOSURE	62	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
E. PATIENT AND CONTROL OBSERVED SIMULTANEOUSLY	63	1 - Yes 2 - No 3 - Not applicable
F. PATIENT - OPERATOR COMMUNICATION AVAILABLE	64	1 - Yes 2 - No 3 - Not applicable
G. RADIATION AREA POSTED	65	1 - Yes 2 - No 3 - Not applicable

Item No.	Item and Remarks	Card Column	Code
H.	PRIMARY BEAM SHIELD PRESENT	66	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
I.	CONTROL PANEL LOCKED WHEN NOT IN USE	67	1 - Yes 2 - No 3 - Not applicable
J.	SOURCE CALIBRATED ANNUALLY	68	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
	DATE OF LAST CALIBRATION		Not coded
K.	THERAPEUTIC TYPE PROTECTIVE SOURCE HOUSING	69	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
L.	PRIMARY AND SECONDARY BARRIERS AND ADEQUATE	70	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
M.	ADEQUATE OPERATOR PROTECTION	71	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined
N.	BEAM MONITORING DEVICE	72	1 - Yes 2 - No 3 - Not applicable 9 - Unknown or Undetermined

Item No.	Item and Remarks	Card Column	Code
O.	EMERGENCY PROCEDURES POSTED	73	1 - Yes 2 - No 3 - Not applicable
P.	LEAK TEST PERFORMED	74	1 - Yes 2 - No 3 - Not applicable
	DATE OF LAST TEST		Not coded
13	SURVEYORS		Not coded

BLANK PAGE

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

X-RAY PROTECTION SURVEY REPORT
FACILITY

FORM APPROVED
BUDGET BUREAU NO. [illegible]

1. NAME OF FACILITY: Miller Memorial Hospital
2. TELEPHONE: 824-1020
3. NUMBER ASSIGNED BY AGENCY: 0 0 1 3 7 7
4. LOCATION (Street, Building, Room Number): 1016 WOODALE DRIVE
7. STATE: MARYLAND — COUNTY: MONTGOMERY — CITY: SILVER SP.
5. DATE (Mo., Day, Yr.): 0 9 0 9 6 6
6. CARD I.D.: 1 0 1 0 8 — 1 9 — 0 3 1 — 0 5 5 0
8. PERSON IN CHARGE OF X-RAY FACILITY: E.F. SEAGLE, M.D
9. PERSON RESPONSIBLE FOR RADIATION SAFETY: NAME E.F. SEAGLE, M.D. TITLE RADIOLOGIST
10. PERSON INTERVIEWED: K. G. SAUER RT POSITION CHIEF TECH.
11. PREVIOUS RADIATION SAFETY SURVEY: 1. ___ Yes 2. ✓ No — 2
BY WHOM: DATE:
12. TYPE OF FACILITY: 1. ___ Private Office 2. ✓ Hospital 3. ___ Clinic 4. ___ Mobile 5. ___ Other (Specify) — 2
13. TYPE OF PRACTICE: HOSPITAL — 9 0

14. PERSONNEL
- A. TOTAL NUMBER OCCUPATIONALLY EXPOSED 7 — A 0 7
- B. TOTAL NUMBER OF OPERATORS 0 4 — C. TOTAL NUMBER MONITORED ___ — C 0 7
- D: MONITORING SYSTEM EMPLOYED: 0. ___ Never or none 1. ✓ Currently 2. ___ Within past year 3. ___ Not within past year — D 1
- E. MONITORING SYSTEM ADEQUATE: 1. ✓ Yes 2. ___ No 3. ___ N/A — E 1
- F. MONITORING RECORDS SATISFACTORY: 1. ✓ Yes 2. ___ No 3. ___ N/A — F 1
- G. LEVELS/MONTH: 75 Maximum MR. — H. NUMBER OVER 300 MR/QUARTER ___ — H 0

15. "WORKLOAD"
- A. PATIENTS RADIOGRAPHED (Average per week) 150 — A 0 1 5 0
- B. PATIENTS FLUOROSCOPED (Average per week) 20 — B 0 2 0
- C. THERAPY TREATMENTS (Average per week) 15 — C 0 1 5

16. EQUIPMENT
- A. TOTAL NUMBER OF MACHINES AT THIS FACILITY 5 — A 0 5
- B. TOTAL NUMBER OF UNITS (Tubes) 5 — B 0 5

17. FILM AND SCREEN
- A. BRAND AND TYPE OF X-RAY FILM USED KODAK ROYAL BLUE — A 3 1
- B. TYPE OF INTENSIFYING SCREEN MEDIUM SPEED — B 0 2

18. DARKROOM PROCEDURE
- A. DARKROOM LIGHT TIGHT: 0. ___ No darkroom 1. ✓ Yes 2. ___ No — A 1
- B. TYPE OF DEVELOPER: KODAK — B 0 8
- C. AUTOMATIC PROCESS: 1. ___ Yes 2. ✓ No — C 2
- D. HOW OFTEN CHANGED (Weeks) 0 6 — E. HOW OFTEN REPLENISHED (Days) ___ — E 0 1
- F. THERMOMETER PRESENT: 1. ✓ Yes 2. ___ No 3. ___ Thermostatically controlled — F 1
- G. TEMPERATURE INDICATED: ___ °F 6 8 — H. TIMER PRESENT: 1. ✓ Yes 2. ___ No — 1
- I. TIME IN DEVELOPER (Minutes) ___ — I 5.0

19. RADIOACTIVE MATERIALS
- A. RADIUM EVER PRESENT: 1. ✓ Yes 2. ___ No — A 1
- B. OTHER ISOTOPES EVER PRESENT: 1. ___ Yes 2. ___ No — B 2

20. REASON FOR SURVEY: 1. ✓ Initial 2. ___ Follow-up 3. ___ Re-survey 4. ___ Request 5 ___ Complaint 6. ___ Other (Specify) — ☐

21. SURVEYORS: A. J. BRENNAN B. R. McDOWELL

PHS-4499-1 (REV. 7-65)

(Use reverse side for remarks or sketch)

WORKLOAD (*Ma-Min/wk*) ________

SHIELDING INFORMATION

MAX. KVP ________

LOCATION	COMPOSITION AND THICKNESS	ENVIRONS OR CONTROL	PRIMARY OR SECONDARY	USE X OCCUPANCY	TARGET TO WALL DISTANCE	N.B.S. REQUIRED BARRIER	ADDITIONAL SHIELDING REQUIRED
NORTH (*Top*)							
EAST (*Right*)							
SOUTH (*Bot.*)							
WEST (*Left*)							
ABOVE							
BELOW							

SKETCH OF FACILITY AHD/OR REMARKS

[illegible]

PHS-4495-1 (BACK)
REV. 7-65

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

X-RAY PROTECTION SURVEY REPORT
RADIOGRAPHIC

FORM APPROVED
BUDGET BUREAU NO. 68-R606

1. NAME OF FACILITY: MILLER MEMORIAL HOSPITAL
2. TELEPHONE: 824-1020
3. NUMBER ASSIGNED BY AGENCY: 0 0 1 3 7 7
4. LOCATION (Street, Building, Room Number): 1016 WOODALE DRIVE
5. DATE (Mo., Day, Yr.): 0 9 0 9 6 6
6. CARD I.D.: 2 0 1 0 3
7. STATE: MARYLAND 1 9 — COUNTY: MONTGOMERY 0 3 1 — CITY: SILVER SPRING 0 5 5 0

8. EQUIPMENT IDENTIFICATION

A. NUMBER ASSIGNED MACHINE: 1

B. CONTROL PANEL MANUFACTURER: GENERAL ELECTRIC — B 0 8

C. TUBE HEAD MANUFACTURER AND MODEL: GENERAL ELECTRIC-LWRT — C 1 7

D. COMBINATION: 1. ✓ Yes 2. ___ No — D 1

E. TYPE: 1. ✓ Fixed Radiographic (indicate special type) ___ 2. ___ Photofluorographic 3. ___ Mobile 4. ___ Other (specify) ___ — E 1

F. NUMBER OF TUBES: 2 — G. MAXIMUM KVP (RATED): 1 5 0 — H. MAXIMUM MA (RATED): 3 0 0

9. FILTRATION

A. TOTAL MM. ALUMINUM EQUIVALENT — A. BEFORE 2.0 — B. AFTER 2.5

10. "WORKLOAD"

A. AVERAGE NUMBER OF PATIENTS PERWEEK (estimate): 50 — A 0 5 0

B. TOTAL NUMBER OF EXPOSURES PER WEEK (estimate): 150

11. USUAL PROCEDURES

EXAMINATION (specify)	KVP	MA / TIME	MAS	EXPOSURES PER WK.	FILM SIZE	DISTANCE (inches)	BEAM TYPE	BEAM SIZE (inches)	COLLIMATION
1. CHEST	1 0 8 0	100 / 1/10	0 1 0	100	14x17 4	7 2	REC 3	1 9	VAR COL. 4
2. ABDOMEN	2 0 8 2	200 / 3/10	0 6 0	15	14x17 4	4 0	REC 3	1 9	VAR COL 4
3.									

12. EXPOSURE SWITCH

A. ADEQUATE LOCATION: 1. ✓ Yes 2. ___ No — A 1

13. TIMER

A. ADEQUATE: 1. ✓ Yes 2. ___ No — A 1

14. PROTECTIVE DEVICES

A. GONADAL SHIELD FOR PATIENT: 1. ___ Yes 2. ✓ No 3. ___ N/A — A 2

B. ADEQUATE OPERATOR PROTECTION: 1. ✓ Yes 2. ___ No — B 1

C. ADEQUATE PRIMARY AND SECONDARY BARRIERS: 1. ✓ Yes 2. ___ No 3. ___ N/A — C 1

D. DIAGNOSTIC-TYPE TUBE HOUSING: 1. ✓ Yes 2. ___ No — D 1

15. STRAY RADIATION MEASUREMENTS

POSITION	EXPOSURE RATE MR/HR	POSITION	EXPOSURE RATE MR/HR
A. OPERATOR	1	D. DARKROOM-DOOR OPEN	75
B. DOOR WAY-DOOR OPEN	200	E. DARKROOM-DOOR CLOSED	6
C. BEHIND CASSETTE	5	F. IN HALL-DOOR CLOSED	15

(MAXIMUM READINGS TAKEN AT KVP 80 MA 50 SECONDS 1)

16. SURVEYORS

A. J. BRENNAN

B. R. McDOWELL

PHS-4495-3 (REV 7-65)

(Use reverse side for remarks or sketch)

WORKLOAD *(Ma-Min/wk)* ________ **SHIELDING INFORMATION** MAX. KVP ________

LOCATION	COMPOSITION AND THICKNESS	ENVIRONS OR CONTROL	PRIMARY OR SECONDARY	USE X OCCUPANCY	TARGET TO WALL DISTANCE	N.B.S. REQUIRED BARRIER	ADDITIONAL SHIELDING REQUIRED
NORTH *(Top)*							
EAST *(Right)*							
SOUTH *(Bot.)*							
WEST *(Left)*							
ABOVE							
BELOW							

SKETCH OF RADIOGRAPHIC ROOM AND/OR REMARKS

[illegible]

PHS-4495-3 (BACK)
REV. 7-65

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

X-RAY PROTECTION SURVEY REPORT
FLUOROSCOPIC

FORM APPROVED
BUDGET BUREAU NO. 68-R069

1. NAME OF FACILITY: Miller Memorial Hospital
2. TELEPHONE: 524-1020
3. NUMBER ASSIGNED BY AGENCY: 0 0 1 3 7 7
4. LOCATION (Street, Building, Room Number): 1016 WOODALE DRIVE
7. STATE: MARYLAND 1 9 — COUNTY: MONTGOMERY 0 3 1 — CITY: SILVER SPRING 0 5 5 0
5. DATE (Mo., Day, Yr.): 0 9 0 9 6 6
6. CARD I.D.: 3 0 1 0 2

8. EQUIPMENT IDENTIFICATION

A. NUMBER ASSIGNED MACHINE: 1 — B: 0 8
B. CONTROL PANEL MANUFACTURER: GENERAL ELECTRIC
C. TUBE HEAD MANUFACTURER AND MODEL: GENERAL ELECTRIC - LWRT — C: 1 7
D. COMBINATION: 1. [✓ Yes] 2. ___ No — D: 1
E. TYPE: 1. ___ Vertical 2. ___ Horizontal 3. [✓ Tilting Table] 4. ___ Other — E: 3
F. IMAGE INTENSIFYING DEVICE USED: 1. ___ Yes 2. [✓ No] — F: 2
G. OTHER IDENTIFICATION (Specify)

9. ACCESSORY SHIELDING

A. LEADED GLOVES: 1. [✓ Yes] 2. ___ No — 1
B. LEADED APRON: 1. ___ Yes 2. [✓ No] — B: 2
C. BUCKY SLOT COVER: 1. [✓ Yes] 2. ___ No 3. ___ N/A — C: 1
D. LEADED DRAPES AROUND SCREEN: 1. ___ Yes 2. [✓ No] 3. ___ N/A — D: 2
E. OTHER (Specify)

10. DARK ADAPTATION

A. GOGGLES USED: 1. [✓ Yes] 2. ___ No
B. NUMBER OF MINUTES: 10 — B: 1 0

11. USUAL PROCEDURES

EXAMINATION	KVP	MA	MINUTES TUBE ACTIVATED PER EXAMINATION	EXAMINATIONS PER WEEK
A. UPPER G. I.	0 9 0	0 3	3	1 0
B. LOWER G. I.	0 9 0	0 3	4	0 5
C. OTHER (Specify) VARIOUS		0 3	5	0 5

D. TOTAL MA-MIN/ WEEK: 2 2 5

12. SPOT FILMS

A. AVERAGE EXPOSURES PER WEEK: 60 — 0 6 0

13. SCREEN

A. FLUOROSCOPIC SCREEN GANGED TO X-RAY TUBE: 1. [✓ Yes] 2. ___ No — A: 1
B. LEADED GLASS SATISFACTORY: 1. [✓ Yes] 2. ___ No 3. ___ N/A — B: 1
C. SHUTTERS FUNCTION PROPERLY: 1. [✓ Yes] 2. ___ No 3. ___ Fixed — C: 1
D. USEFUL BEAM LIMITED TO SCREEN: 1. ___ Yes 2. [✓ No] — D: 2
Overlap: ___ Top ___ Right ___ Bottom 6.8 Left

14. DISTANCE

A. TARGET TO PANEL (Inches): 18 — A: 1 8

15. ROENTGEN OUTPUT

A. USEFUL BEAM AT PANEL SURFACE: 5.8 R/MIN. — A: 0 5 . 8

16. FILTRATION

A. TOTAL MM. ALUMINUM EQUIVALENT: A. Before 9 . 8 B. After 9 . 8

17. TIMER

A. DEADMAN TYPE EXPOSURE SWITCH: 1. [✓ Yes] 2. ___ No
B. MANUALLY RESET CUMULATIVE TIMER: 1. [✓ Yes] 2. ___ No
C. CUMULATIVE TIMER TERMINATES EXPOSURE: 1. [✓ Yes] 2. ___ No
A: 1 B: 1 C: 1

18. FLUOROSCOPIC ROOM

A. LIGHT TIGHT. 1. [✓ Yes] 2. ___ No 3. ___ N/A — A: 1

19. STRAY RADIATION MEASUREMENTS

POSITION	EXPOSURE RATE (MR/HR)	POSITION	EXPOSURE RATE (MR/HR)
A. OPERATOR	10	D. ROOM DOORWAY	4
B. ABOVE SCREEN	15	E.	
C. DARKROOM	2	F.	

(MAXIMUM READINGS TAKEN AT KVP 90 MA 3 SECONDS 1)

20. SURVEYORS

A. J. BRENNAN
B. R. McDOWELL

PHS-4495-2 (REV. 7-65)

(Use reverse side for remarks or sketch)

WORKLOAD (Ma-Min/wk) ________ **SHIELDING INFORMATION** MAX. KVP ________

LOCATION	COMPOSITION AND THICKNESS	ENVIRONS OR CONTROL	PRIMARY OR SECONDARY	USE X OCCUPANCY	TARGET TO WALL DISTANCE	N.B.S. REQUIRED BARRIER	ADDITIONAL SHIELDING REQUIRED
NORTH (Top)							
EAST (Right)							
SOUTH (Bot.)							
WEST (Left)							
ABOVE							
BELOW							

SKETCH OF FLUOROSCOPIC ROOM AND OR REMARKS

[illegible]

PHS-4485-2 (BACK)
REV. 7-65

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

RADIATION PROTECTION SURVEY REPORT
THERAPEUTIC

FORM APPROVED
BUDGET BUREAU NO. [illegible]

1. NAME OF FACILITY: Miller Memorial Hospital
2. TELEPHONE: 824-1020
3. NUMBER ASSIGNED BY AGENCY: 0 0 1 9 9 9
4. LOCATION (Street, Building, Room Number): 1016 WOODALE DRIVE
5. DATE (Mo., Day, Yr.): 0 9 0 9 6 6
6. CARD I.D.: 4 0 1 0 2
7. STATE: MARYLAND 1 9 COUNTY: MONTGOMERY 0 3 1 CITY: SILVER SPRING 0 5 5 0

8. EQUIPMENT IDENTIFICATION

A. NUMBER ASSIGNED UNIT 1
B. RADIATION SOURCE 2
C. UNIT MANUFACTURER: Eldorado, Atomic Energy of Canada Ltd. 9 6
D. TYPE OF UNIT: 1. ☐ Superficial 2. ☐ Deep 3. ☐ Supervoltage 4. ☑ Teletherapy 5. ☐ Other (Specify) 4

9. "WORKLOAD"

A. AVERAGE TIME PER TREATMENT (MIN.) 0 6
B. AVERAGE NUMBER OF TREATMENTS PER WEEK 0 1 5

X-RAY

C. MAXIMUM kVp USED 0 0 0 0
D. MAXIMUM mA USED 0 0
E. AVERAGE mAm PER WEEK 0 0 0 0

ISOTOPE

F. STRENGTH OF RADIONUCLIDE (RHM) 3 6 0 0
G. ROENTGENS PER WEEK AT ONE METER 5 4 0 0

10. FILTRATION

A. FILTER IDENTIFICATION SYSTEM 1. ☐ Yes 2. ☐ No 3. ☑ N/A A 3
B. SECURE FILTER SLOT 1. ☐ Yes 2. ☐ No 3. ☑ N/A B 3

11. COLLIMATION

A. SHUTTER POSITION INDICATED AT CONTROL 1. ☑ Yes 2. ☐ No 3. ☐ N/A A 1
B. VARIOUS PORT SIZES AVAILABLE 1. ☑ Yes 2. ☐ No 3. ☐ N/A B 1
C. LEAD RUBBER, FOIL, ETC., TO LIMIT FIELD 1. ☐ Yes 2. ☑ No 3. ☐ N/A C 2

12. PROTECTIVE QUALITIES AND DESCRIPTIVE INFORMATION

A. TYPE OF TREATMENT 1. ☐ Stationary 2. ☑ Rotational A 2
B. ADEQUATE INTERLOCK SYSTEM 1. ☑ Yes 2. ☐ No 3. ☐ N/A B 1
C. MANUALLY RESET CUMULATIVE TIMER 1. ☑ Yes 2. ☐ No 3. ☐ N/A C 1
D. TIMER TERMINATES EXPOSURE 1. ☑ Yes 2. ☐ No 3. ☐ N/A D 1
E. PATIENT AND CONTROL OBSERVED SIMULTANEOUSLY 1. ☑ Yes 2. ☐ No 3. ☐ N/A E 1
F. PATIENT-OPERATOR COMMUNICATION AVAILABLE 1. ☑ Yes 2. ☐ No 3. ☐ N/A F 1
G. RADIATION AREA POSTED 1. ☑ Yes 2. ☐ No 3. ☐ N/A G 1
H. PRIMARY BEAM SHIELD PRESENT 1. ☑ Yes 2. ☐ No 3. ☐ N/A H 1
I. CONTROL PANEL LOCKED WHEN NOT IN USE 1. ☑ Yes 2. ☐ No 3. ☐ N/A I 1
J. SOURCE CALIBRATED ANNUALLY 1. ☐ Yes 2. ☑ No 3. ☐ N/A J 2
DATE OF LAST CALIBRATION 3/16/64
K. THERAPEUTIC TYPE PROTECTIVE SOURCE HOUSING 1. ☑ Yes 2. ☐ No 3. ☐ N/A K 1
L. PRIMARY AND SECONDARY BARRIERS ADEQUATE 1. ☑ Yes 2. ☐ No 3. ☐ N/A L 1
M. ADEQUATE OPERATOR PROTECTION 1. ☑ Yes 2. ☐ No 3. ☐ N/A M 1
N. BEAM MONITORING DEVICE 1. ☑ Yes 2. ☐ No 3. ☐ N/A N 1
O. EMERGENCY PROCEDURES POSTED 1. ☑ Yes 2. ☐ No 3. ☐ N/A O 1
P. LEAK TEST PERFORMED 1. ☑ Yes 2. ☐ No 3. ☐ N/A P 1
DATE OF LAST TEST 3/16/64

13. SURVEYORS

A. J. BRENNAN
B. R. McDOWELL

PHS-4480-7 (6-66)

(Use reverse side for sketch and/or remarks)

14. RADIATION MEASUREMENTS

TAKEN AT ________ kV ________ FIELD SIZE ________ FILTER ________

LOCATION OF MEASUREMENTS	SKETCH POSITION	HEIGHT OF INSTRUMENT ABOVE FLOOR (IN FEET)	BEAM DIRECTION (IN DEGREES)	PHANTOM		mR/HOUR	REMARKS
				YES	NO		

15. SKETCH AND/OR REMARKS

16. SHIELDING INFORMATION

WORKLOAD (mAmin/wk) ________

MAX. kVp ________

LOCATION	COMPOSITION AND THICKNESS	ENVIRON OR CONTROL	PRIMARY OR SECONDARY	USE X OCCUPANCY	TARGET TO WALL DISTANCE	N.B.S. REQUIRED BARRIER	ADDITIONAL SHIELDING REQUIRED
NORTH (Top)							
EAST (Right)							
SOUTH (Bot.)							
WEST (Left)							
ABOVE							
BELOW							

PHS-4499-7 (BACK)
6-66

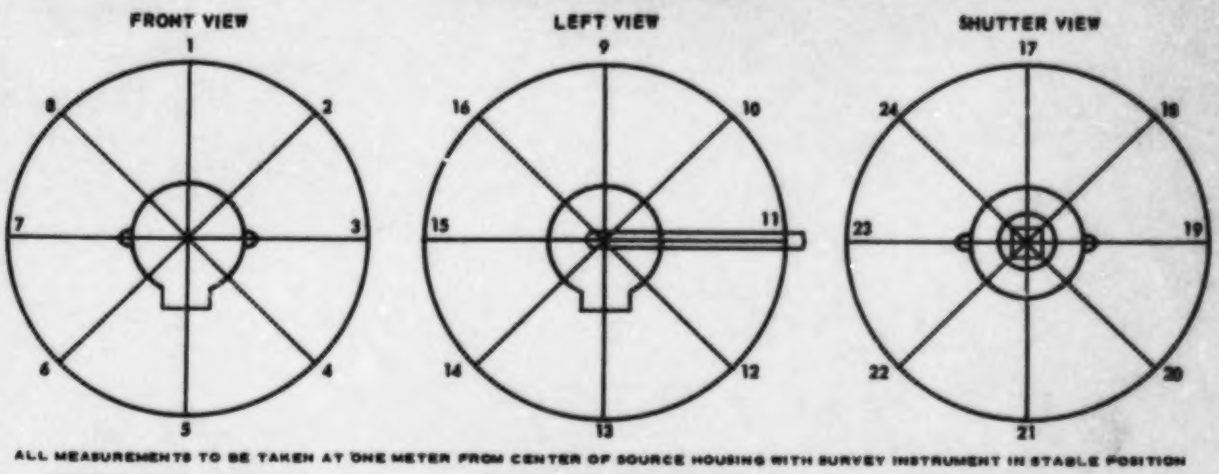
GPO 908-199

RADIATION PROTECTION SURVEY REPORT
THERAPEUTIC TYPE PROTECTIVE SOURCE HOUSING DATA

NUMBER ASSIGNED BY AGENCY						
	1	2	3	4	5	6

1. MEASUREMENTS OF SOURCE HOUSING LEAKAGE IN OFF POSITION

SHUTTER POSITION DOWNWARD



FRONT VIEW

LEFT VIEW

SHUTTER VIEW

ALL MEASUREMENTS TO BE TAKEN AT ONE METER FROM CENTER OF SOURCE HOUSING WITH SURVEY INSTRUMENT IN STABLE POSITION

POSITION NO.	mR/hr
1	
2	
3	
4	
5	
6	
7	
8	

POSITION NO.	mR/hr
9	
10	
11	
12	
13	
14	
15	
16	

POSITION NO.	mR/hr
17	
18	
19	
20	
21	
22	
23	
24	

POSITION 1 equals POSITION 9
POSITION 7 equals POSITION 23
POSITION 5 equals POSITION 13
POSITION 3 equals POSITION 19
POSITION 17 equals POSITION 15
POSITION 11 equals POSITION 21

2. REMARKS

3. SURVEYORS	SIGNATURE A.	SIGNATURE B.	DATE

PHS-4495-8
6-66

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE

Form Approved
Budget Bureau No. 68-R908

SURVEY MANUAL GLOSSARY

ALUMINUM EQUIVALENT - The thickness of aluminum affording the same attenuation, under specified conditions, as the material in question.

AUTOMATIC PROCESSOR - A machine which will accept an exposed undeveloped film and produce the completely developed film automatically.

BEDSIDE UNIT (X-RAY MACHINE) - See "Mobile X-ray Machine".

BUCKY SLOT - The rectangular opening along the side of an X-ray table which allows for the positioning of the "Bucky" grid and film cassette.

CALIBRATION (OF A SOURCE) - A method used to determine the exposure rate of radiation produced from an electronic source for a given applied voltage and tube current or from a nuclide at any given time in its decay.

COLLIMATING DEVICE - A device used to restrict the size of the useful beam.

COMBINATION UNIT - An X-ray machine, consisting of one or more tubes, which is capable of both radiography and fluoroscopy.

DARK ADAPTATION - The adjustment period required for the eyes to reach a condition of increased light sensitivity.

DEVELOPER - A chemical reagent used in making visible the latent image on a sensitized film.

DIAGNOSTIC TYPE TUBE HOUSING - X-ray tube housing so constructed that the leakage radiation at a distance of one meter from the target cannot exceed 100 mR in 1 hour when the tube is operated at any of its specified ratings.

EXPOSURE SWITCH - A mechanical or electrical device which directly activates and deactivates the X-ray tube.

FACILITY - A part or subdivision of an institution that relates to specifically provided services.

FILM SPEED - The sensitivity of the film. It varies inversely as to the amount of exposure required to obtain a specific density above fog level and to the detail obtained.

FILTRATION - An attenuating material, usually aluminum or copper, which is utilized to "harden" or remove certain low energy X-rays from the primary beam.

FLUOROSCOPY - Observation of a fluorescent image on an appropriate screen caused by X-rays transmitted through an object.

IMAGE INTENSIFIER - A device, utilizing both electronics and optics, used in fluoroscopy to increase the brightness of the fluoroscopic image without increasing exposure or decreasing detail.

INSTALLATION - A fixed radiation source(s) and its environs.

INSTITUTION - A hospital, university, firm or corporation either public or private.

INTENSIFYING SCREEN - A plate treated with a material which will fluoresce when exposed to X-rays and which in use is placed in close proximity to the X-ray film.

kVp - (KILOVOLTS PEAK) - The peak potential applied to the X-ray tube expressed as thousands of volts.

LEAK TEST - A test performed to determine if radioactive material is escaping from a sealed source.

mA - (MILLIAMPERES) - Current flow from cathode to anode expressed as thousandths of an ampere.

mAm - (MILLIAMPERE-MINUTES) - The product of tube current, in mA, multiplied by the time, in minutes, during which it flows.

MOBILE X-RAY MACHINE - An X-ray machine which may be moved at will.

MONITORING SYSTEM - A method to test for amount and type of radiation; often used to determine whether exposure rates are within specified limits.

OCCUPATIONALLY EXPOSED - Any person, except patients, employed in a controlled area for whom there is any reasonable probability of receiving a dose exceeding one-fourth of the maximum permissible dose, taking into consideration the use of protective gloves, aprons, or other radiation limiting devices.

PHOTOFLUOROGRAPHY - A method whereby a photograph is taken of an image which appears on a fluorescent screen.

PHOTOTIMER - An electronic instrument that will automatically terminate an X-ray exposure once the pre-determined quantity of radiation has been reached.

PORTABLE UNIT (X-RAY MACHINE) - See "Mobile X-ray Machine".

PRIMARY BARRIER - A barrier of attenuating materials sufficient to reduce the intensity of the useful beam to the required degree.

RADIATION CONTROLLED AREA - A defined area in which the occupational exposure of personnel to radiation or to radioactive material is under the supervision of an individual in charge of radiation protection. (This implies that a controlled area is one that requires control of access, occupancy, and working conditions for radiation protection purposes.)

RADIOGRAPH - A permanent image produced upon a sensitive surface, such as film, by a form of radiation other than light, especially X-rays.

RADIONUCLIDE - An element or an isotope, either free or combined, which spontaneously emits particles and/or rays by the disintegration of its nucleus.

ROENTGEN - Unit of exposure does of X- or gamma radiation. One Roentgen is an exposure does of X- or gamma radiation such that the associated corpuscular emission per 0.001293 gram of air produces, in air, ions carrying 1 esu of quantity of electricity of either sign.

SCREEN SPEED - The ability of an intensifying screen to cause increased blackening of an X-ray film upon exposure to X-rays. The faster the screen speed the less the intensity of radiation required to cause the desired amount of blackening of the film.

SECONDARY BARRIER - A barrier of attenuating materials sufficient to reduce stray radiation to the required degree.

SHIELDING - A barrier of attenuating materials used to reduce radiation exposure.

SOURCE - A radioactive nuclide or electronic tube or device which emits radiation.

SPOT FILM - A radiograph taken during fluoroscopy.

STRAY RADIATION - Radiation not serving any useful purpose. It includes leakage and secondary radiation.

SURVEY METER - A device which is capable of measuring radiation exposure under expected operating conditions.

TELETHERAPY UNIT - A machine used for the treatment of diseased tissue by radiation emanating from a gamma emitting nuclide which is at some distance remote from the tissue.

TELETHERAPY TYPE SOURCE HOUSING - A protective source housing so constructed that at 1 meter from the source, the maximum and the average exposure rates do not exceed 10 mR/hr and 2 mR/hr, respectively, when the beam control mechanism is in the "off" position.

THERAPEUTIC TYPE TUBE HOUSING - An X-ray tube housing so constructed that the leakage radiation at a distance of 1 meter from the target cannot exceed 1 R in one hour and at a distance of 5 cm from any point on the surface of the housing accessible to the patient cannot exceed 30 R in one hour when the tube is operated at any of its specified ratings.

TUBE TARGET - That portion of the tube anode which is struck by the beam of electrons and from which X-rays are emitted.

USEFUL BEAM - That part of the radiation which passes through the window, aperture, cone or other collimating device of the tube housing.

The ABSTRACT CARDS on the following page are designed to facilitate document retrieval using Coordinate Indexing. They provide space for an accession number (to be filled in by the user), suggested key words, bibliographic information, and an abstract. The Coordinate Index concept of reference material filing is readily adaptable to a variety of filing systems. Coordinate Indexing is described in the publication "IBM Data Processing Techniques--Index Organization for Information Retrieval (C 20-8062)." Copies are available through IBM Branch Offices. The cards are furnished in triplicate to allow for flexibility in their use (e.g., author card index, accession number card index).

☆ U. S. GOVERNMENT PRINTING OFFICE : 1967 O - 244-294